

CITY OF WASCO 2010 URBAN WATER MANAGEMENT PLAN

JUNE 2011

REVISED JANUARY 2013

Prepared for:

**CITY OF WASCO
764 E Street
Wasco, California 93280**

Prepared by:

**Palmetto Engineering and Land Surveying, Inc.
4300 Ashe Road, Suite 103
Bakersfield, California 93313
(661) 664-4806**



TABLE OF CONTENTS

INTRODUCTION.....	1
PUBLIC PARTICIPATION AND PLAN ADOPTION	1
APPROPRIATE LEVEL OF PLANNING	2
RELATIONSHIP OF UWMP TO OTHER PLANNING EFFORTS	2
SECTION 1 PLAN PREPARATION	7
URBAN WATER MANAGEMENT PLAN COORDINATION	7
URBAN WATER MANAGEMENT PLAN PREPARATION	7
RESOURCE MAXIMIZATION / IMPORT MINIMIZATION PLAN	8
SECTION 2 SYSTEM DESCRIPTION.....	9
SUPPLIER SERVICE AREA	9
POPULATION AND DEMOGRAPHICS.....	9
CLIMATE	10
DEMOGRAPHIC AND ECONOMIC TRENDS AFFECTING WATER MANAGEMENT.....	11
LAND USE AND POPULATION PROJECTIONS ASSUMPTIONS	12
WASCO'S PROPOSED ROSE CITY INDUSTRIAL PARK	13
SECTION 3 SYSTEM DEMANDS.....	14
PAST, CURRENT AND PROJECTED WATER USE.....	14
WATER USE BY CUSTOMER TYPE.....	15
RESIDENTIAL SECTOR	17
COMMERCIAL SECTOR.....	17
INDUSTRIAL SECTOR	17
INSTITUTIONAL/GOVERNMENTAL SECTOR	18
LANDSCAPE/RECREATIONAL SECTOR	18
AGRICULTURAL SECTOR	18
SALES TO OTHER AGENCIES	18
ADDITIONAL WATER USES AND LOSSES	19
GROSS WATER DEMANDS	20
BASELINE AND TARGETS	20
SECTION 4 SYSTEM SUPPLIES.....	25
CURRENT AND PLANNED WATER SUPPLIES.....	25
GROUNDWATER.....	25
RECHARGE AREAS.....	26
TRANSFER AND EXCHANGE OPPORTUNITIES	34
DEVELOPMENT OF DESALINATED WATER	34
WHOLESALE WATER	34
DETERMINATION OF DMM IMPLEMENTATION	35
RECYCLED WATER PLAN	35
WASTEWATER QUANTITY, QUALITY AND CURRENT USES.....	35
POTENTIAL AND PROJECTED USE, OPTIMIZATION PLAN WITH INCENTIVES.....	38
SECTION 5 WATER SUPPLY RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING	40
SUPPLY RELIABILITY.....	40
BASIS OF WATER YEAR DATA.....	42
FREQUENCY AND MAGNITUDE OF SUPPLY DEFICIENCIES	42
FACTORS RESULTING IN INCONSISTENCY OF SUPPLY	42
PLANS TO SUPPLEMENT WATER SOURCES	43
WATER SERVICE RELIABILITY	45
PROJECTED NORMAL WATER YEAR SUPPLY AND DEMAND COMPARISON	45

PROJECTED SINGLE-DRY-YEAR SUPPLY AND DEMAND COMPARISON	46
PROJECTED MULTIPLE-DRY-YEAR SUPPLY AND DEMAND COMPARISON	47
PLANNED WATER SUPPLY PROJECTS AND PROGRAMS	52
WATER SHORTAGE CONTINGENCY PLAN	53
STAGES OF ACTION	53
ESTIMATE OF MINIMUM SUPPLY FOR NEXT THREE YEARS	54
CATASTROPHIC SUPPLY INTERRUPTION PLAN.....	55
PROHIBITIONS, PENALTIES, AND CONSUMPTION REDUCTION METHODS	55
ANALYSIS OF REVENUE IMPACTS OF REDUCED SALES DURING SHORTAGES	57
DRAFT ORDINANCE/RESOLUTION AND USE MONITORING PROCEDURE	58
CITY OF WASCO WATER QUALITY	59
WATER QUALITY IMPACTS ON RELIABILITY	62
SECTION 6 DEMAND MANAGEMENT MEASURES	63
DMM 1 – WATER SURVEY PROGRAMS FOR SINGLE-FAMILY RESIDENTIAL, AND MULTI-FAMILY, RESIDENTIAL CUSTOMERS	63
DMM 2 – RESIDENTIAL PLUMBING RETROFIT	64
DMM 3 – SYSTEM WATER AUDITS, LEAK DETECTION, AND REPAIR.....	64
DMM 4 – METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS.....	65
DMM 5 – LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES.....	66
DMM 6 – HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAMS	66
DMM 7 – PUBLIC INFORMATION PROGRAMS	67
DMM 8 – SCHOOL EDUCATION PROGRAMS	68
DMM 9 – CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL ACCOUNTS.....	68
DMM 10 – WHOLESALE AGENCY PROGRAMS	68
DMM 11 – CONSERVATION PRICING.....	68
DMM 12 – WATER CONSERVATION COORDINATOR	69
DMM 13 – WATER WASTE PROHIBITION.....	69
DMM 14 – RESIDENTIAL ULTRA-LOW FLUSH TOILET REPLACEMENT PROGRAMS	69
APPENDIX A	71
NOTICE OF PUBLIC HEARING	72
PROOF OF PUBLICATION.....	73
NOTICE OF INTENT LETTERS TO AGENCIES	76
APPENDIX B	79
NO-WASTE ORDINANCE.....	80
ORDINANCE RELATED TO THE SCHEDULE OF RATES FOR WATER	81
CITATION FOR WATER WASTE VIOLATORS	85
DRAFT RESOLUTION TO DECLARE A WATER SHORTAGE EMERGENCY.....	86
APPENDIX C	87
2009 CONSUMER CONFIDENCE REPORT	88
CRUCIAL PIPELINE INTER-TIES.....	92
SAMPLE WATER BILL.....	93
CONSERVATION FLYER FOR SCHOOL EDUCATION.....	94

LIST OF TABLES

TABLE 1-1 COORDINATION WITH APPROPRIATE AGENCIES	7
TABLE 2-1 POPULATION PROJECTIONS	10
TABLE 2-2 CLIMATE	11
TABLE 2-3 GENERAL PLAN LAND USE BY PLANNING HORIZON, ACRES	12
TABLE 2-4 POTENTIAL MAXIMUM POPULATION WITHIN PLANNING BOUNDARIES	12
TABLE 3-1 WATER DEMAND BASED ON POPULATION PROJECTIONS	14
TABLE 3-2 - PAST, PRESENT AND FUTURE WATER DELIVERIES	16
TABLE 3-3 WATER DISTRIBUTION	19
TABLE 3-4 ADDITIONAL WATER USES AND LOSSES	20
TABLE 3-5 TOTAL WATER USE	20
TABLE 3-6 BASE PERIOD RANGES	21
TABLE 3-7 BASE DAILY PER CAPITA WATER USE — 10- TO 15-YEAR RANGE	22
TABLE 3-8 BASE DAILY PER CAPITA WATER USE — 5-YEAR RANGE	24
TABLE 4-1 CURRENT AND PLANNED WATER SUPPLIES	25
TABLE 4-2 CITY OF WASCO WATER WELLS	32
TABLE 4-3 AMOUNT OF GROUNDWATER PUMPED	34
TABLE 4-4 AMOUNT OF GROUNDWATER PROJECTED TO BE PUMPED	34
TABLE 4-5 PARTICIPATING AGENCIES	35
TABLE 4-6 WASTEWATER COLLECTED AND TREATED	37
TABLE 4-7 RECYCLED WATER USES - ACTUAL	37
TABLE 4-8 RECYCLED WATER USES - POTENTIAL	38
TABLE 5-1 SUPPLY RELIABILITY	41
TABLE 5-2 BASIS OF WATER YEAR DATA	42
TABLE 5-3 FACTORS RESULTING IN INCONSISTENCY OF SUPPLY	43
TABLE 5-4 PROJECTED NORMAL WATER YEAR SUPPLY	45
TABLE 5-5 PROJECTED NORMAL WATER YEAR DEMAND	45
TABLE 5-6 PROJECTED NORMAL YEAR SUPPLY AND DEMAND COMPARISON	45
TABLE 5-7 PROJECTED SINGLE DRY YEAR SUPPLY	46
TABLE 5-8 PROJECTED SINGLE DRY YEAR DEMAND	46
TABLE 5-9 PROJECTED SINGLE DRY YEAR SUPPLY AND DEMAND COMPARISON	46
TABLE 5-10 PROJECTED SUPPLY DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2015	47
TABLE 5-11 PROJECTED DEMAND DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2015	47
TABLE 5-12 PROJECTED SUPPLY AND DEMAND COMPARISON DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2015	47
TABLE 5-13 PROJECTED SUPPLY DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2020	48
TABLE 5-14 PROJECTED DEMAND DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2020	48
TABLE 5-15 PROJECTED SUPPLY AND DEMAND COMPARISON DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2020	48
TABLE 5-16 PROJECTED SUPPLY DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2025	49
TABLE 5-17 PROJECTED DEMAND DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2025	49
TABLE 5-18 PROJECTED SUPPLY AND DEMAND COMPARISON DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2025	49
TABLE 5-19 PROJECTED SUPPLY DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2030	50
TABLE 5-20 PROJECTED DEMAND DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2030	50
TABLE 5-21 PROJECTED SUPPLY AND DEMAND COMPARISON DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2030	50
TABLE 5-22 PROJECTED SUPPLY DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2035	51
TABLE 5-23 PROJECTED DEMAND DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2035	51
TABLE 5-24 PROJECTED SUPPLY AND DEMAND COMPARISON DURING MULTIPLE DRY YEAR PERIOD ENDING IN 2035	51
TABLE 5-25 FUTURE WATER SUPPLY PROJECTS	53
TABLE 5-26 WATER SUPPLY STAGES AND CONDITIONS	54
TABLE 5-27 THREE-YEAR ESTIMATED MINIMUM WATER SUPPLY	55
TABLE 5-28 PREPARATION ACTIONS FOR A CATASTROPHE	55
TABLE 5-29 MANDATORY PROHIBITIONS	56
TABLE 5-30 CONSUMPTION REDUCTION METHODS	56
TABLE 5-31 PENALTIES AND CHARGES	56
TABLE 5-32 CURRENT AND PROJECTED WATER SUPPLY CHANGES DUE TO WATER QUALITY – PERCENTAGE	62
TABLE 6-1 METER RETROFIT OF EXISTING UNMETERED CONNECTIONS	65
TABLE 6-2 PUBLIC INFORMATION - PLANNED	67

LIST OF FIGURES

FIGURE 1. TULARE LAKE HYDROLOGIC REGION	30
FIGURE 2. GROUNDWATER QUALITY – UNCONFINED AQUIFER.....	31
FIGURE 3. WASCO WATER WELLS LOCATION	33
FIGURE 4. GROUNDWATER WELLS NITRATE CONCENTRATION DISTRIBUTION	61

Introduction

In 1984, the California Legislature enacted Assembly Bill 797, which is known as the Urban Water Management Planning Act (Act). This Act requires each urban water supplier with 3,000 or more connections, or which supplies at least 3,000 acre-feet per year (AFY) of water, to prepare an Urban Water Management Plan, the primary objective of which is to plan for the conservation and efficient use of water. The Plan must be reviewed every five years and must be adopted after public review and hearing. It is then filed with the California Department of Water Resources (DWR) who provides a report to the legislature summarizing the status of all plans submitted.

One of the purposes of developing an Urban Water Management Plan (UWMP) is to evaluate whether a water supplier can meet the water demands of its water customers as projected over a 20- or 25-year period. This evaluation is accomplished through analysis of current and projected water supply and demand for normal or average conditions, as well as during water shortages.

The City of Wasco supplies potable water to a population of approximately 19,511 residents (2010).¹ The City's sole source of potable water is pumped from groundwater wells owned and operated by the City.

The outline of this UWMP generally follows the March 2, 2011, "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" developed by the DWR. Some sections of the outline presented in the guidelines have been combined or moved into a different order than the guidelines, but all the information requested in the UWMP guidelines and act are described within this document.

Public Participation and Plan Adoption

The City has encouraged public participation in the development of its Urban Water Management Plan. In accordance with the Act, the City of Wasco City Council held a public hearing on June 7, 2011. Thirty days prior to adoption, a notice of the public hearing was published in the local newspaper, notifying interested parties that the draft Plan was available at

¹ Not including prison population

the City Hall for review. The Notice of Public Hearing/Notice of Availability and Proof of Publication are attached in Appendix A.

The Draft 2010 UWMP was presented to the City Council for its consideration. The City Council considered all comments received from interested parties, made modifications as appropriate, and adopted the 2010 Urban Water Management Plan on June 7, 2011. A copy of the adopting resolution is included in Appendix A. The Final 2010 UWMP incorporates minor, administrative revisions and it is available for public viewing at the Wasco City Hall.

Appropriate Level of Planning

The Act specifies the required content of each UWMP and allows for the level of detail provided in each UWMP to reflect the size and complexity of the water supplier. The Act requires projections in five-year increments for a minimum of 20 years. This UWMP considers a 25-year planning horizon.

Relationship of UWMP to other Planning Efforts

City of Wasco General Plan

Wasco's existing General Plan was completed and adopted in 2002. By state law, the General Plan must be reviewed and revised periodically to reflect new information and the inevitable changes to the community's needs, values, and vision of what the City should be. As part of the General Plan update, City staff should incorporate a build-out analysis, which among other things, is dependent upon future water supply and demand. The current General Plan is outdated and does not include water supply and demand projections.

City of Wasco 2007 Water Master Plan

The City of Wasco Water Master Plan was completed in April 2007. The master plan identifies water facilities to serve the City growth expected within the next 20 years and looks ahead to a longer-term growth of 50 years or more. The master plan develops an improvement plan consisting of water supply wells, transmission/distribution pipelines, storage and pumping facilities to provide domestic water service for future growth. The projected future water demands were based on land uses defined by the City's Planning Staff. The 2007 Water Master Plan is the most recent planning document. The water supply and demand projections

contained in this UWMP are in turn based on the build-out analyses prepared under the 2007 Water Master Plan.

Senate Bills 221 and 610

In 2001, the California Legislature enacted two laws, Senate Bill (SB) 221 and SB 610, each designed to achieve greater coordination during the land use planning process between water suppliers and local land use agencies when considering certain large-scale development projects. SB 610 requires the preparation of a Water Supply Assessment (WSA) for any development whose approval is subject to the California Environmental Quality Act and which meets the definition of "project" in Water Code Section 10913, i.e., residential development projects of more than 500 dwelling units or other types of developments (e.g., hotels and motels, commercial buildings, industrial parks, etc.) using a comparable amount of water. The WSA must describe the proposed project's water demand over a 20-year period, identify the sources of water available to meet that demand and include an assessment of whether or not those water supplies are, or will be sufficient to meet the demand for water associated with the proposed project, in addition to the demand of existing customers and other planned future development. If the conclusion is that water supplies are or will be insufficient, then the WSA must describe plans (if any) for acquiring additional water supplies, and the measures that are being undertaken to acquire and develop those supplies.

SB 221 is similar in many respects to SB 610. However, it applies only to residential projects of 500 units or more and requires the land use planning agency to include as a condition of approval of a tentative map, parcel or development agreement a requirement that "sufficient water supply" be available. Proof of a sufficient water supply must be based on a written verification from the public water system that will serve the development. SB 610 requires preparation of the WSA sufficiently early in the development review process to allow incorporation in the CEQA evaluation and documentation of the project. SB 221, by contrast, becomes operative when the City is considering approval of a tentative subdivision map. Under SB 610, the "water supplier" is understood to mean the City of Wasco, which is responsible for the public water system. The "governing body," as used in SB 610, refers to the City Council, which is required to approve the WSA and make required findings that adequate water supplies are available for urban growth to proceed.

The UWMP is the primary information and planning tool in assessing water supply adequacy and is coordinated closely with the City's Water Department. As noted above, to enable the City to comply with SB 221 and SB 610, the 2005 UWMP, 2010 UWMP update and the City's 2007 Water Master Plan are utilizing the same land use build-out analyses and future water supply and demand projections. Future WSAs will rely on the data and information contained in those documents.

Assembly Bill 2572

State law (AB 2572) enacted in 2004 requires all water suppliers to install water meters on all customer connections by January 1, 2025. Additionally, beginning in January 2010, all metered services must be billed at a metered rate. However the law allows for a short adjustment period after the meter is installed. On and after January 1, 2010, the bill requires an urban water supplier that applies for financial assistance from the state for a wastewater treatment project, drinking water treatment project, or water use efficiency project, or a permit for a new or expanded water supply, to demonstrate that the applicant meets certain requirements. The bill authorizes a water purveyor, including an urban water supplier, to recover the cost of providing services related to the purchase, installation, and operation of a water meter from rates, fees, or charges (Water Code Section 525-529.7).

Senate Bill 1087

On October 7, 2005, SB 1087 was signed into law, requiring public agencies and private entities providing water or sewer services to grant priority for those services to proposed developments that include housing units for lower income households (Government Code Section 65589.7). The City's most current information on low-income housing is from the 2006. In 2006, the City had an estimated 948 families with income below the poverty level¹, but the data does not distinguished between Single and Multi-Family, therefore associated water demands could not be determined. The City does not have projections for future low-income housing units; therefore associated water demands cannot be determined for future low-income housing units.

Assembly Bill 1420

Assembly Bill AB 1420 amended the Urban Water Management Planning Act, Water Code Section 10610 et seq., to require, effective January 1, 2009, that the terms of, and eligibility for,

¹ Source: Demographic Snapshot Report – www.wascoforbusiness.com.

any water management grant or loan made to an urban water supplier and awarded or administered by the Department of Water Resources (DWR), State Water Resources Control Board (SWRCB), or California Bay-Delta Authority (CBDA) or its successor agency (collectively referred to as “Funding Agencies”) , be conditioned on the implementation of the water Demand Management Measures (DMMs) described in Water Code Section 10631(f).

Senate Bill x7-7

Senate Bill x7-7 was enacted in November 2009, requiring all water suppliers to increase water use efficiency. Below are the highlights of this legislation, divided into two sectors, Urban Water Conservation and Agricultural Water Conservation.

The bill also requires, among other things, that the Department of Water Resources, in consultation with other state agencies, develop a single standardized water use reporting form, which would be used by both urban and agricultural water agencies.

Urban Water Conservation

The legislation sets an overall goal of reducing per capita urban water use by 20% by December 31, 2020. The state shall make incremental progress towards this goal by reducing per capita water use by at least 10% by December 31, 2015.

- Each urban retail water supplier shall develop water use targets and an interim water use target by July 1, 2011.
- An urban retail water supplier shall include in its water management plan due July 2011 the baseline daily per capita water use, water use target, interim water use target, and compliance daily per capita water use. The Department of Water resources, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part
- The Department of Water Resources shall adopt regulations for implementation of the provisions relating to process water.
- A Commercial, Institutional, Industrial (CII) task force is to be established that will develop and implement urban best management practices for statewide water savings.
- Effective 2016, urban retail water suppliers who do not meet the water conservation requirements established by this bill are not eligible for state water grants or loans.

Agricultural Water Conservation

- Agricultural water suppliers shall prepare and adopt agricultural water management plans by December 31, 2012, and update those plans by December 31, 2015, and every 5 years thereafter.
- On or before July 31, 2012, agricultural water suppliers shall:
 - Measure the volume of water delivered to customers. The Department of Water Resources shall adopt regulations that provide for a range of options that agricultural water suppliers may use to comply with the measurement requirement.
 - Adopt a pricing structure for water customers based at least in part on quantity delivered.
 - Implement additional efficient management practices.
- Effective 2013, agricultural water suppliers who do not meet the water management planning requirements established by this bill are not eligible for state water grants or loans.

Section 1 Plan Preparation

The City of Wasco prepared this update of its Urban Water Management Plan during the spring of 2011. The updated plan was presented to the City Council in June 2011 (see Appendix A), considered all comments received from interested parties, made modifications as appropriate, and adopted the 2010 Urban Water Management Plan. The Urban Water Management Plan as adopted will be submitted to the California Department of Water Resources within 30 days of Council approval.

Urban Water Management Plan Coordination

Coordination with appropriate City departments has occurred with preparation of this UWMP. City departments consulted include the Water Department, Public Works Department, Planning Department and the City Manager's Office.

The City coordinated the update of the plan with other agencies in the area that might have an interest in its preparation. The City notified local water retailers and public agencies of the City's intent to prepare this 2010 UWMP, as well as of the public meetings regarding the UWMP (see attached letters in Appendix A). Copies of this plan have been forwarded to Kern County Water Agency, the Shafter-Wasco Irrigation District and Semitropic Water Storage District for their review and comment.

Table 1-1 Coordination with Appropriate Agencies							
	Participated in UWMP development	Commented on the draft	Attended public meetings	Contacted for assistance	Received copy of draft	Sent notice of intention to update /adopt	Not Involved/ No Information
Kern County Water Agency					Yes	Yes	
Shafter-Wasco Irrigation District					Yes	Yes	
Semitropic Water Storage District					Yes	Yes	

Urban Water Management Plan Preparation

This UWMP update was prepared by Palmetto Engineering and Land Surveying, Inc., the Contract City Engineer for the City of Wasco. The Contract City Engineer followed the California

Department of Water Resources Guidebook recommended methodology to complete the UWMP.

Resource Maximization / Import Minimization Plan

The City has incorporated water management tools to maximize water resources. The City has been committed to integrating water conservation into future supply and demand solutions for both the water system and the wastewater treatment system. The City's main emphasis is in water conservation as detailed in the Demand Management Measures included elsewhere in this report.

Section 2 System Description

A variety of demographic factors may affect water use, including current and projected population, climate, population density, and the mix of customer types. This section provides information on Wasco's service area characteristics, including a description of the service area, its population and climate.

Supplier Service Area

The City of Wasco, incorporated in 1945, provides water, sewer collection, wastewater treatment, storm drainage, road, and refuse service to the community. The original water system was developed in the 1920's under the authority of the Wasco Public Utilities District. The system consisted of groundwater wells and tower reservoir. The Wasco Public Utility District (District) operated and maintained the water and sewage collection and treatment systems within the City until 1989. At the time the district, assets were transferred to the City. The tower reservoir is no longer used; however, the water system has been improved and expanded since the original construction to meet current needs.

Water service is primarily domestic serving residential areas with various commercial customers. Meters have been installed on nearly all residential and commercial connections. Meter reading and billing transition will be completed by 2012. All industrial connections are metered. Larger agricultural water users typically have installed their own source wells and are not connected to the City's water distribution system. The Semitropic Water Storage District and the Shafter-Wasco Irrigation District provide water for irrigation and crops in the city and surrounding area. Therefore the City of Wasco is responsible for providing potable water for its residents and businesses, but not for irrigating agriculture.

Population and Demographics

The City's 2002 General Plan Update (General Plan) projects population through year 2050. The City's service area will be expanded into the City's sphere of influence. The UWMP uses population projections from the City's Water Master Plan, dated April 2007 and prepared by ECO:LOGIC Engineering. The 2007 Water Master Plan is the most recent water planning document.

The City of Wasco currently serves approximately 19,511 residents and growing. According to the 2007 Water Master Plan, the City has indicated that it expects a somewhat steady

population growth of 1,137 people per year (based on 300 single family dwelling units and 3.79 people per dwelling unit). The estimated population based on the expected growth rates is summarized in Table 2-1.

Table 2-1 Population Projections						
	2010 ^(a)	2015 ^(b)	2020 ^(b)	2025 ^(b)	2030 ^(b)	2035 ^(b)
Service Area Population	19,511	25,196	30,881	36,566	42,251	47,936

^(a) Source: Wasco – DWR Public Water System Statistics for Calendar Year 2010. Not including prison population

^(b) Source: City of Wasco Water Master Plan, April 2007. Based on an addition of 300 single family dwelling units per year and 3.79 persons per single family dwelling unit.

Climate

The City of Wasco is located in the northern section of the County of Kern at the southern end of the San Joaquin Valley, about twenty-five miles northwest of Bakersfield. The climate is characterized by hot, dry summers and cooler, humid winters. Mean maximum temperatures range from 50° Fahrenheit in the winter to 100° Fahrenheit in the summer. Precipitation averages around 6.85 inches annually. Typically, the rainy season runs from November through April. Tule fog is common in the winter, sometimes lasting for extended periods. Prevailing winds are typically out of the northwest and average from 5 to 10 miles per hour. Table 2-2 provides climate data for the City of Wasco, including average maximum and minimum temperatures, rainfall and evapotranspiration (ET_o). Evapotranspiration is the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues). It is an indicator of how much water crops, lawn, garden, and trees need for healthy growth and productivity.¹

¹ <http://www.cimis.water.ca.gov/cimis/welcome.jsp>. CIMIS – California Irrigation Management Information System, Department of Water Resources, Office of Water Use Efficiency.

Table 2-2 Climate

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Standard Monthly Average ETo ^(a)	1.25	2.07	3.85	5.69	7.48	7.98	8.23	7.4	5.78	4.11	2.04	1.18	57.06
Average Rainfall (inches) ^(b)	1.22	1.79	1.22	0.68	0.27	0.08	0.01	0.02	0.12	0.33	0.59	0.92	7.24
Average Maximum Temperature (°F) ^(b)	56.7	63.2	69.1	76.6	85.1	93.7	100.1	98.5	91.9	81.8	68.0	57.7	78.5
Average Minimum Temperature (°F) ^(b)	34.7	38.2	42.1	46.5	53.2	59.4	64.9	63.0	57.8	49.1	39.6	39.6	48.6

^(a) ETo data for the Shafter/USDA weather station. (CIMIS station 5).

^(b) NOAA Wasco weather station No. 049452. Period of Record: 7/1/1948 to 12/31/2010

Demographic and Economic Trends Affecting Water Management

The City expects continued residential and commercial growth. The City of Wasco is evaluating their water and wastewater infrastructure needs to serve planned City growth. The current City boundary encompasses approximately 8.5 square miles, about 900 acres of which are undeveloped. In April 2007 the City prepared the City of Wasco Water Master Plan. This master plan identifies water facilities to serve City growth expected within the next 20 years and looks ahead to longer-term growth horizon of 50 years or more.

Findings of the master plan report include the following:¹

- Over next 20 years, the City is expecting to increase its overall boundary service area from approximately 5,400 acres to 10,600 acres. The residential population is expected to increase from current (2006) population of 18,000 to 41,000 by 2026.
- Citywide annual water demands are expected to increase from approximately 4.1 MGD to 15.0 MGD in 2026.
- The water system needed to serve the build-out of the 20-year growth areas would include up to 18 additional wells, an expanded distribution system, the proposed 3 million gallon (MG) storage tank and two additional 1 MG storage tanks.
- The expected costs for the expanded system (wells, storage tanks, distribution mains)

¹ City of Wasco Water Master Plan, April 2007.

are \$84.1 million for the 20-year service area and \$39.6 million to extend service beyond the 20-year service area to the Long-Term service area. These are total project costs expressed in current dollars and include 40 percent for contingencies, engineering and administration costs.

Land Use and Population Projections Assumptions

The City provided land use assumptions expected within the service area boundaries for both 20-year growth and longer term City growth. Table 2-3 summarizes the current and expected future zoning information.¹

Table 2-3 General Plan Land Use by Planning Horizon, Acres			
Land Use Assignment	Current Within City	20-Year Horizon	Long-Term Horizon
Senior		1,120	1,120
Rural-residential	110	20	2,470
Estate Residential	170	720	2,480
Very Low Residential		120	1,320
Single Family Home	1,670	3,360	4,750
Medium Density Residential	150	190	290
High Density Residential	10	20	70
Commercial	410	520	630
Industrial	850	2,330	2,430
Public Facilities	1,650	1,840	2,240
Parks	210	340	450
Agricultural	160		
Miscellaneous	40		
Total	5,430	10,580	18,250

Source: City of Wasco Water Master Plan, April 2007. Table 2-1

Table 2-4 estimates the potential population within each planning boundary at build out using City provided capita per dwelling unit density factors.

Table 2-4 Potential Maximum Population within Planning Boundaries				
General Plan Land Use Category	Density, People per DU	City Boundary	20-Year Horizon	Long-Term Horizon
Senior	1.50	-	8,570	8,570
Rural-residential	3.20	30	10	670
Estate Residential	3.20	450	1,950	6,750
Very Low Residential	3.20	-	640	7,170
Single Family Home	3.79	26,910	54,120	76,520
Multi Family Unit	3.79	4,850	6,140	9,360
Large Apartment	3.79	490	990	3,370
Total		32,730	72,420	112,410

Source: City of Wasco Water Master Plan, April 2007. Table 2-3

Wasco's Proposed Rose City Industrial Park¹

In 2007, when the 2005 Urban Water Management Plan was prepared, the City had proposed a 1,640 acre industrial park on the east side of town. This project, known as the Rose City Industrial Park, is dead and the Environmental Impact Report was decertified.

¹ City of Wasco Water Master Plan, April 2007.

Section 3 System Demands

Past, Current and Projected Water Use

This section of the UWMP presents the actual water use and projected water demands at five year increments between 2005 and 2035. The City's 2002 General Plan Update projects population through year 2050. The City's service area will likely expand into the City's sphere of influence. The 2010 UWMP uses population projections from the City's Water Master Plan, dated April 2007 and prepared by ECO:LOGIC Engineering. The 2007 Water Master Plan is the most recent water planning document.

According to the 2007 Water Master Plan, water demands were developed by using City approved land uses for areas within existing City limits, a proposed 20-year, and long-term boundaries. Existing and future land use was established from information received from the City's Planning Department. Additionally, water demands based on population projections were estimated by interpolating between the 2005 per capita consumption of 225 gallons per day and the calculated future 2026 per capita consumption of 317 gallons per day which represents the projected population growth less the proposed consumption of the ethanol plant due to termination of the project. For complete details on the methodology used to develop the projected water demands please refer to Section 3-16 of the City of Wasco 2007 Water Master Plan.

Table 3-1 shows the estimated water demands per capita, based on the projected population growth per the methodology developed in the City of Wasco 2007 Water Master Plan.

Table 3-1 Water Demand Based On Population Projections		
Year	Population	Average Per Capita Demand (gpcpd)
2010	19,511	214
2015	25,196	236
2020	30,881	258
2025	36,566	280
2030	42,251	302
2035	47,936	324

Source: 2010 actual data, projections are based on 2007 Water Master Plan, Sec 3.6.1

The 2007 Water Master Plan assumed that by year 2026 the industrial area would be fully built-out. This assumption was based on information received from the City planners.¹

Water Use by Customer Type

Table 3-2 shows that the City's gross water demand, was 4,681 acre-feet per year in 2010 and is projected to increase to 17,397 acre-feet per year in 2035. The number of water accounts was 4,544 in 2010 and is projected to increase to a total of 12,384 water accounts in 2035. The projections assume plumbing code requirements are implemented.

The 2006-2013 Regional Housing Needs Plan prepared by the Kern Council of Governments identified 208 Extremely Low/Very low housing units and 142 Low Income housing units, for a total of 350 low income housing units. These 350 units at 3.79 persons per household and 214 gpcpd yields a water demand of 317 acre feet per year. The water demand for these low income housing units is included in the projected demand.

¹ City of Wasco Water Master Plan, April 2007.

Table 3-2 - Past, Present and Future Water Deliveries

Year	Water Use Sectors		Single Family	Multi-Family	Commercial/Institutional/Government	Industrial	Landscape	Agricultural	Other	Total
2005	Metered	# of Accts	25	45	56	19	12	-	14	171
		Deliveries AF/Y	26.46	370.32	239.17	204.45	188.15	-	25.78	1054.33
	Unmetered	# of Accts	3347	195	211	0	31	-	-	3784
		Deliveries AF/Y	n/a	n/a	n/a	-	n/a	-	-	3389.81
2010	Metered	# of Accts	29	53	64	15	21	-	-	182
		Deliveries AF/Y	29	360	296	223	116	-	-	1024
	Unmetered	# of Accts	3996	85	233	1	47	-	-	4362
		Deliveries AF/Y	2876	26	285	13	232	-	-	3432
2015	Metered	# of Accts	5525	152	328	19	75	-	-	6099
		Deliveries AF/Y	4196	533	799	333	466	-	-	6327
	Unmetered	# of Accts	-	-	-	-	-	-	-	0
		Deliveries AF/Y	-	-	-	-	-	-	-	0
2020	Metered	# of Accts	7025	168	362	22	83	-	-	7660
		Deliveries AF/Y	5623	714	1071	446	625	-	-	8479
	Unmetered	# of Accts	-	-	-	-	-	-	-	0
		Deliveries AF/Y	-	-	-	-	-	-	-	0
2025	Metered	# of Accts	8525	186	400	25	92	-	-	9227
		Deliveries AF/Y	7225	918	1376	573	803	-	-	10895
	Unmetered	# of Accts	-	-	-	-	-	-	-	0
		Deliveries AF/Y	-	-	-	-	-	-	-	0
2030	Metered	# of Accts	10025	205	441	29	101	-	-	10801
		Deliveries AF/Y	9005	1143	1715	715	1001	-	-	13579
	Unmetered	# of Accts	-	-	-	-	-	-	-	0
		Deliveries AF/Y	-	-	-	-	-	-	-	0
2035	Metered	# of Accts	11525	226	487	34	112	-	-	12384
		Deliveries AF/Y	10960	1392	2088	870	1218	-	-	16528
	Unmetered	# of Accts	-	-	-	-	-	-	-	0
		Deliveries AF/Y	-	-	-	-	-	-	-	0

Note: The 350 low income housing units at 3.79 persons per household and 214 gpcpd yields a water demand of 317 acre feet per year. The water demand for these low income housing units is included in the projected demand.

Residential Sector

In the City of Wasco, single-family residential customers average 3.79 persons per connection. Multi-family residential customers average 3.79 persons per housing unit, and average 10 units per multi-family complex. Total system per capita water use (excluding agricultural water use) averages 225 gallons per capita per day in 2005. Water efficiency improvements appear to be reducing per capita water use, which will prevent a return to post-drought levels.

Residential water consumption is composed of both indoor and outdoor uses. Indoor water use includes sanitation, bathing, laundry, cooking and drinking. Most outdoor water use is to meet landscaping irrigation requirements. Other minor outdoor uses include car washing, surface cleaning, and similar activities. Single-family residences generally contain larger landscaped areas, predominantly planted in turf, and require more water for outdoor application in comparison to other types of housing. The general characteristics of multifamily and mobile homes limit outdoor landscaping and water use, although some condominium and apartment developments do contain green belt areas.

The City expects a somewhat steady population growth of 1,137 people per year (based on 300 single family dwelling units and 3.79 people per dwelling unit).¹

Commercial Sector

The City has a complex mix of commercial customers, ranging from markets, restaurants, beauty shops, and gas stations to office buildings, regional shopping centers, and high-volume restaurants and other facilities serving the population. The sector is growing at about 2% per year, driven particularly by the need for services by the increasing permanent population. This trend is expected to continue through 2035.

Industrial Sector

The City has a small industrial sector, primarily centered on agriculture related industry. The industrial sector has not grown much in the last decade but has been growing at an increasing rate recently. It is expected to increase at about 3% in the next ten years due to increased interest and incentive in the industrial park site.

¹ City of Wasco Water Master Plan, April 2007.

Institutional/Governmental Sector

The City has a stable institutional/governmental sector, primarily local and county government, state prison, schools, public facilities, and a health care facility. This sector will keep pace with the growth of the city.

Landscape/Recreational Sector

There are four parks and a golf course within the City limits. These large landscape water users are supplied with landscape water by the Shafter-Wasco Irrigation District (SWID). The City only supplies the potable water to the public restrooms for the parks and golf course and the golf course clubhouse. Cormack Park is irrigated with City water only, while the golf course is irrigated with Well #2 when SWID allotment is used. The south side mini park is irrigated with City water only. Landscape and Recreational customer demand is expected to increase approximately 2% per year for the next 20 years, due to continued growth in population. Increased efficiency and landscape conversions at existing parks, golf courses, and cemeteries should help offset new demand resulting from projected increases in this sector.

Agricultural Sector

Trees and vines account for more than half of Kern County's gross agricultural value, reflecting the importance of these crops to the local economy. Agriculture is an important source of employment in Kern County. About 25 percent of all jobs in the county are agriculture-related. For some smaller communities, agriculture is nearly the sole source of employment. The City of Wasco currently has an agricultural employment rate of 75 percent.

Agricultural water for local farmers is supplied by the Shafter-Wasco Irrigation District. The City uses recycled water feed and fodder type crops irrigation on City-owned land. The farming operation is run by local farming interests on a competitive bidding basis. Effluent generally flows by gravity with the use of booster pumps during high flows through several miles of pipeline and open ditches. There are storage ponds at the WWTP and in the farmed area.

Sales to Other Agencies

Currently the City has no sales of water to other agencies. This is a distinct possibility in the future but the quantities of water are unknown at this time.

Additional Water Uses and Losses

Unaccounted for water is considered water that is produced and distributed but not sold or metered. In 2010, all residences and commercial/institutional/government services have been metered and will start being read in 2011.

To better understand the distribution of the water produced among its services, the City has conducted an audit study of its metered residential services. Results of the audit indicate that the average single-family residence water demand is approximately 600 gallons per day. This value is believed to be a reasonable estimate¹.

Table 3-3 summarizes the calculated produced water distribution throughout the City's services.

Table 3-3 Water Distribution		
Category	Usage (AF)	Percentage
Residential	3639.00	77.74%
Non-Residential	756.00	16.15%
City Government	47.00	1.00%
Construction	7.00	0.15%
Fires	7.00	0.15%
Swimming Pools	0.04	0.00%
Leaks	225.00	4.81%

Source: City of Wasco 2010 water Department Data

It is estimated that approximately five percent of the water produced by the City is lost due to leaks, firefighting, swimming pools and filling of construction water trucks.

Table 3-4 shows unaccounted-for water which is defined to be the difference between water produced and water sold to customers. This differential between water supply and metered water use includes system flushing, firefighting, unmetered construction usage, unmetered swimming pool filling, system leaks, repair flushing, hydrant leaks, street sweeping and known leaks that are subsequently repaired. The City is committed to minimizing its unaccounted-for water and staying within the industry average of 10% loss (maximum).

¹ City of Wasco Water Master Plan, April 2007.

Table 3-4 Additional Water Uses and Losses							
Water Use	2005	2010	2015	2020	2025	2030	2035
Unaccounted-for & losses	3,390	225	333	446	573	715	870
Total	3,390	225	333	446	573	715	870

Units of Measure: acre-feet/year

Gross Water Demands

Table 3-5 summarizes the City's total past, current, and projected water demands as determined in this section. The demand totals shown in this table will be used in the comparison of supplies and demands in this UWMP. The figures for 2005 and 2010 are actual water use amounts for the year. The gross water demand projections assume that State-mandated plumbing codes are being enforced and adhered to by all new development. As for existing water users, the table assumes a certain level of plumbing retrofits will be implemented.

Table 3-5 Total Water Use							
Water Use	2005	2010	2015	2020	2025	2030	2035
Customer demand total	1,054	4,456	6,328	8,479	10,896	13,578	16,527
Unaccounted-for & losses	3,390	225	333	446	573	715	870
Total	4,444	4,681	6,661	8,925	11,469	14,293	17,397

Units of Measure: acre-feet/year

Baseline and Targets

The Water Conservation Act (SBX7-7) of 2009 requires urban retail water suppliers to set both interim 2015 and final 2020 urban water use targets to the end of reaching a 10 percent per capita reduction by 2015 and a 20 percent reduction by 2020. The Act also directs urban water suppliers to define a 10 to 15 year base period for water use that will be used to develop their targets of per capita water use. Water use over a 5 year base period is also required to determine the minimum water use reduction by 2020.

There are four steps a water supplier is to complete for the 2010 UWMP per the Water Conservation Act of 2009.

Step 1: Determine Base Daily Per Capita Water Use

Base daily per capita use is measured in gallons per capita per day (GPCD) and is set for an initial 10 to 15 year base period. Three methods were developed for a water supplier to determine its base daily per capita water use:

- Methodology 1 – Gross Water Use
- Methodology 2 – Service Area Population
- Methodology 3 – Base Daily per Capita Water Use

The percentage of non-potable water used to satisfy irrigation demands compared to total water deliveries in 2008 is used to determine the number of continuous years the water supplier may use to calculate the average GPCD. Table 3-6 summarizes the 2008 total and non-potable irrigation water deliveries and defines the continuous 10-to-15 year and 5-year base periods being used.

Table 3-6 Base Period Ranges			
Base	Parameter	Value	Units
10- to 15-year base period	2008 total water deliveries	1561.2	MG
	2008 total volume of delivered recycled water	589.5	MG
	2008 recycled water as a percent of total deliveries	37	percent
	Number of years in base period ¹	10	years
	Year beginning base period range	1998	
	Year ending base period range ²	2007	
5-year base period	Number of years in base period	5	years
	Year beginning base period range	2003	
	Year ending base period range ³	2007	

¹ If the 2008 recycled water percent is less than 10 percent, then the first base period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first base period is a continuous 10- to 15-year period.

² The ending year must be between December 31, 2004 and December 31, 2010.

³ The ending year must be between December 31, 2007 and December 31, 2010.

If an urban retail water supplier's recycled water deliveries for 2008 meet or exceed ten percent of total deliveries, then the supplier may choose a longer base period of up to 15 years instead of ten years, provided that the continuous period ending no earlier than December 31, 2004 and no later than December 31, 2010. As shown in Table 3-6, non-potable irrigation water deliveries in 2008 constituted 37% of the total deliveries, exceeding the Department of Water Resources requirement for a 10-to-15-year base period. The City chose to use a ten-year period from 1998 to 2007 as its baseline to determine GPCD targets.

Gross Water Use

The City determined that Gross Water Use constitutes all potable water that entered the distribution system, including agricultural deliveries. Data was calculated on the basis of a calendar year (January 1 to December 31).

Service Area Population

Section 2 of this report describes the process used to determine service area boundaries and population projections.

Base Daily Per Capita Use

The City selected the baseline period of calendar years from 1998-2007. Table 3-7 shows the Gallons per Capita per Day (GPCD) calculation. It is a ratio of Daily Gross Water use over Service Area Population for each year in the baseline period. The average baseline GPCD is **248** gallons/person/day. Table 3-8 details the five year base GPCD use for 2003 – 2007 with an average baseline of **242** gallons/person/day.

Table 3-7 Base daily per capita water use — 10- to 15-year range				
Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence Year	Calendar Year			
Year 1	1998	14266	3.45	242
Year 2	1999	14447	3.74	259
Year 3	2000	15044	3.90	259
Year 4	2001	15317	3.88	254
Year 5	2002	15673	3.98	254
Year 6	2003	16113	4.05	252
Year 7	2004	16502	4.05	246
Year 8	2005	16681	3.97	238
Year 9	2006	17267	4.09	237
Year 10	2007	17889	4.26	238
Base Daily Per Capita Water Use				248

Step 2: Determine Urban Water Use Target

Retail water suppliers can choose from four compliance methods:

- Method 1 – Eighty percent of the water supplier’s baseline per capita use
- Method 2 – Per capita daily water use estimated using the sum of performance standards applied to indoor residential use; landscaped area water use; and commercial, industrial and institutional uses
- Method 3 – Ninety-five percent of the applicable state hydrologic region target as stated in the State’s April 30, 2009 draft 20 x 2020 Water Conservation Plan
- Method 4 – Requires reduction of Base Daily per Capita Water Use a specific amount for different water sectors:
 - Indoor residential water use to be reduced by 15 GPCD or an amount determined by using DWR’s “BMP Calculator”
 - 20 percent savings on all unmetered uses
 - 10 percent savings on baseline CII use
 - 21.6 percent saving on landscape and water loss use

The City has chosen to use Method 1, 80% of average base daily per capita water use, to calculate its preliminary urban water use target. From Table 3-7, the Base Daily per Capita Water Use is 248 GPCD. Then the City’s Preliminary Urban Water Use Target is **198** GPCD.

$$80\% \times 248 \text{ GPCD} = 198 \text{ GPCD}$$

Step 3: Confirm Urban Water Use Target

Step 3 confirms the water supplier’s water use target which was determined in Step 2. It compares the preliminary urban water use target from Step 2 to a 5-year base daily per capita water use value to confirm that the target has met a minimum reduction established by law. The urban water supplier may choose a continuous baseline ending no earlier than December 31, 2007 and no later December 31, 2010. Table 3-8 shows the 5 year base GPCD for the years 2003-2007.

Table 3-8 Base daily per capita water use — 5-year range				
Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence Year	Calendar Year			
Year 1	2003	16113	4.01	249
Year 2	2004	16502	4.04	245
Year 3	2005	16681	4.06	244
Year 4	2006	17267	4.09	237
Year 5	2007	17889	4.26	238
Base Daily Per Capita Water Use				242

If an urban retail water supplier's base daily per capita water use calculated using the 5-year base period is 100 GPCD or less, the supplier is exempt from the five percent minimum reduction. The City exceeds this amount and must calculate 95% of the base daily per capita water use in Table 3-8 to confirm its Urban Water Use Target:

$$95\% \times 242 \text{ GPCD} = 229 \text{ GPCD}$$

The Preliminary Urban Water Use Target from Step 2 (198 GPCD) is less than 95% of the base daily per capita water use (229 GPCD). Therefore the City's Urban Water Use Target is confirmed to be 198 GPCD by 2020.

Step 4: Determine Interim Urban Water Use Target

SBX7-7 directs urban retail water suppliers to set an interim urban water use target with a goal of achieving a 10 percent per capita reduction by 2015. The interim urban water use target is one-half the sum of the Base Daily per Capita Water Use from Step 1 from Step 1 and the Urban Water Use Target from Step 2. The City's 2015 Interim Target is

$$(248 \text{ GPCD} + 198 \text{ GPCD}) / 2 = 223 \text{ GPCD}$$

The City's interim target is 223 GPCD by 2015. Based on the methodology described, the City has already met its Urban Water Use Target since the GPCD in 2010 was 214. The City will continue to track the GPCD in the future and will report it as directed by the Department of Water Resources.

Section 4 System Supplies

The City of Wasco currently has only one source of water available to it, groundwater. Groundwater is drawn from the Kern County Subbasin aquifer by seven deep well turbine pumps.

Current and Planned Water Supplies

The following table summarizes the City's current water supply as well as future (planned) water supplies during normal water years through year 2035.

Table 4-1 Current and Planned Water Supplies						
Water Supply Sources	2010 ^(a)	2015	2020	2025	2030	2035
City produced groundwater	4,681	6,661	8,925	11,469	14,293	17,397
Recycled Water used for Agricultural Irrigation (adds to groundwater supply) ^(b)	1,866	3,246	3,978	4,710	5,443	6,175
Transfers/ Exchanges in or out	0	0	0	0	0	0
Desalination	0	0	0	0	0	0
Total	6,547	9,907	12,903	16,179	19,736	23,572

Units of Measure: acre-feet/year

^(a) Actual Data

^(b) Based on 115gpcpd. Source: Wasco Wastewater Treatment Plant Expansion Project Report, Dec. 2005, pg 2-7

Groundwater

The groundwater body from which the City extracts water has been labeled the Kern County Subbasin (5-22.14) by the California Department of Water Resources Bulletin 118-Update 2003 and is a subbasin of the Tulare Lake Basin (See Figure 1).

The Kern County Groundwater subbasin is bounded on the north by the Kern County line and the Tule Groundwater subbasin, on the east and southeast by granitic bedrock of the Sierra Nevada foothills and Tehachapi Mountains, and on the southwest and west by the marine sediments of the San Emigdio Mountains and Coast Ranges. Principal rivers and streams include Kern River and Poso Creek. Active faults include the Edison, Pond-Poso, and White Wolf faults. Average precipitation values range from 5 in. at the subbasin interior to 9 to 13 in. at the subbasin margins to the east, south, and west.¹

¹ Tulare Lake Hydrologic Region, Kern County Subbasin: California's Groundwater Bulletin 118, Update 2003.

The Tulare Lake Groundwater Basin is not an adjudicated groundwater basin, as defined by the California Water Plan Update, Bulletin 160-98, Figure 3-28 on page 3-54 and Table 3-16 on page 3-55.

The California Water Plan Update, Bulletin 160-98 page 3-50, Table 3-15, lists the 1995 Level Overdraft for the Tulare Lake Region at 820 thousand acre-feet (taf). As shown in Table 3-15, groundwater overdraft is expected to decline to 670 taf during the 2020 average and drought years. During drought periods, water levels in these regions may decline. However, during wet periods, most of these basins recover, thus making application of overdraft or perennial yield concepts difficult.

About 70 percent of the region's overdraft occurs in the Kings-Kaweah-Tule Rivers planning subarea. In 1995 under average water year conditions, the region had 820 taf of groundwater overdraft. By 2020, average year groundwater extraction is forecasted to be about 5.1 maf for the region. Since groundwater provides a buffer for fluctuating year-to-year surface supplies, its availability is of great importance to the region. Although urban use is expected to increase about 410 taf by 2020, groundwater overdraft is expected to decrease 150 taf (from 820 taf to 670 taf) within the planning horizon due to declining agricultural use.¹

Recharge Areas

According to the DWR Bulletin 118-Update 2003, natural recharge is primarily from stream seepage along the eastern subbasin and the Kern River; recharge of applied irrigation water, however, is the largest contributor.

The City of Wasco uses wastewater effluent for agricultural irrigation on City-owned land. The irrigation practice helps to replenish the area groundwater table through deep percolation and reduces groundwater overdraft. The City currently has an active water conservation program including year-round watering restrictions, and prohibition of water waste. Through, the use of a "No-Waste" Ordinance, voluntary rationing on the part of the community and effective water conservation programs the City helps in the reduction of groundwater overdraft.

¹ Tulare Lake Hydrologic Region, Kern County Subbasin: California's Groundwater Bulletin 118, Update 2003.

Groundwater Level Trends¹

The average subbasin water level is essentially unchanged from 1970 to 2000, after experiencing cumulative changes of approximately -15 feet through 1978, a 15-foot increase through 1988, and an 8-foot decrease through 1997. However, net water level changes in different portions of the subbasin were quite variable through the period 1970-2000. These changes ranged from increases of over 30 feet at the southeast valley margin and in the Lost Hills/Buttonwillow areas to decreases of over 25 and 50 feet in the Bakersfield area and McFarland/Shafter areas, respectively. The above information is a summary of unpublished DWR water level data.

Groundwater Storage¹

Kern County Water Agency estimates the total water in storage to be 40,000,000 af and dewatered aquifer storage to be 10,000,000 af (Fryer 2002). It appears that these calculations consider areas of the subbasin which are known to overlay useable groundwater, which they report to be about 1,000,000 acres.

Groundwater Budget (Type A)¹

The budget presented below is based on data collected as part of DWR's Bulletin 160 preparation. The basis for calculations include a 1990 normalized year and land and water use data, with subsequent analysis by a DWR water budget spreadsheet to estimate overall applied water demands, agricultural groundwater pumpage, urban pumping demand, and other extraction data. As no data for subsurface inflow or outflow exists in Bulletin 160 data, these values were obtained from a 1977 groundwater model developed by DWR and the Kern County Water Agency (DWR 1977). Inflows to the subbasin include natural recharge of 150,000 af per year, artificial recharge of 308,000 af per year, applied water recharge 843,000 af per year, and a 1958-1966 average estimated subsurface inflow of 233,000 af per year (DWR 1977), for a total subbasin inflow of 1,534,000 af per year. Subbasin outflows are urban extraction of 154,000 af per year, agricultural extraction of 1,160,000 af per year, other extractions (oil industry related) of 86,333, and subsurface outflow was considered minimal, for a total subbasin outflow of 1,400,300 af per year. In addition to the above budget, KCWA has prepared a detailed long-term water balance from 1970 to 1998 which shows an average change in storage of minus 325,000 af per year (Fryer 2002). This analysis does not consider subsurface inflow.

¹ Tulare Lake Hydrologic Region, Kern County Subbasin: California's Groundwater Bulletin 118, Update 2003.

Groundwater Quality ¹

In general, groundwater quality throughout the region is suitable for most urban and agricultural uses with only local impairments. The primary constituents of concern are high TDS, nitrate, arsenic, and organic compounds. Figure 2, which is a portion of Plate 2 of the Kern County Water Agency Water Supply Report 1997, illustrates the groundwater quality relative to TDS of unconfined aquifers.

The eastern Kern County Subbasin contains primarily calcium bicarbonate waters in the shallow zones, increasing in sodium with depth. Bicarbonate is replaced by sulfate and lesser chloride in an east to west trend across the subbasin. West side waters are primarily sodium sulfate to calcium-sodium sulfate type. The average TDS of groundwater is 400-450 milligram per liter (mg/L) with a range of 150 – 5,000 mg/L.

Shallow groundwater presents problems for agriculture in the western portion of the basin. High TDS, sodium chloride, and sulfate are associated with the axial trough of the subbasin. Elevated arsenic concentrations exist in some areas associated with lakebed deposits. Nitrate, DBCP, and EDB concentrations exceed MCLs in various areas of the basin. Specific data for municipal production wells are available in the DHS water quality database.

Groundwater Management¹

Recharge and in-lieu programs are operated by various water districts, the City of Bakersfield, and Kern County Water Agency. Buena Vista WSD is currently drafting an AB 255 Management Plan. Shafter-Wasco ID implemented an AB 255 management plan in June 1993. West Kern Water District adopted a groundwater management plan. Kern Delta WD adopted a plan on October 15, 1996. Rosedale-Rio Bravo WSD's AB 3030 plan was adopted on March 11, 1997. Arvin-Edison WSD adopted a plan. Cawelo WD adopted an AB 3030 management plan in 1994. While Wheeler Ridge-Maricopa WSD has not formally adopted an AB 255 or AB 3030 plan, it has implemented the groundwater management plan contained in its Project Report. Semitropic Water Storage District adopted a groundwater management plan in September 2003.

The City of Wasco has not adopted a groundwater management plan. The City is currently seeking funding to develop its own groundwater management plan.

¹ Tulare Lake Hydrologic Region, Kern County Subbasin: California's Groundwater Bulletin 118, Update 2003.

A form of groundwater management in California is court adjudication. In some California Groundwater basins, as the demand for groundwater exceeded supply, landowners and other parties turned to the courts to determine how much groundwater can rightfully be extracted by each user. The courts study available data to arrive at a distribution of the groundwater that is available each year, usually based on the California law of overlying use and appropriation. There are 19 court adjudications for groundwater basins in California, mostly in Southern California.¹

The Kern County Subbasin has not been adjudicated.

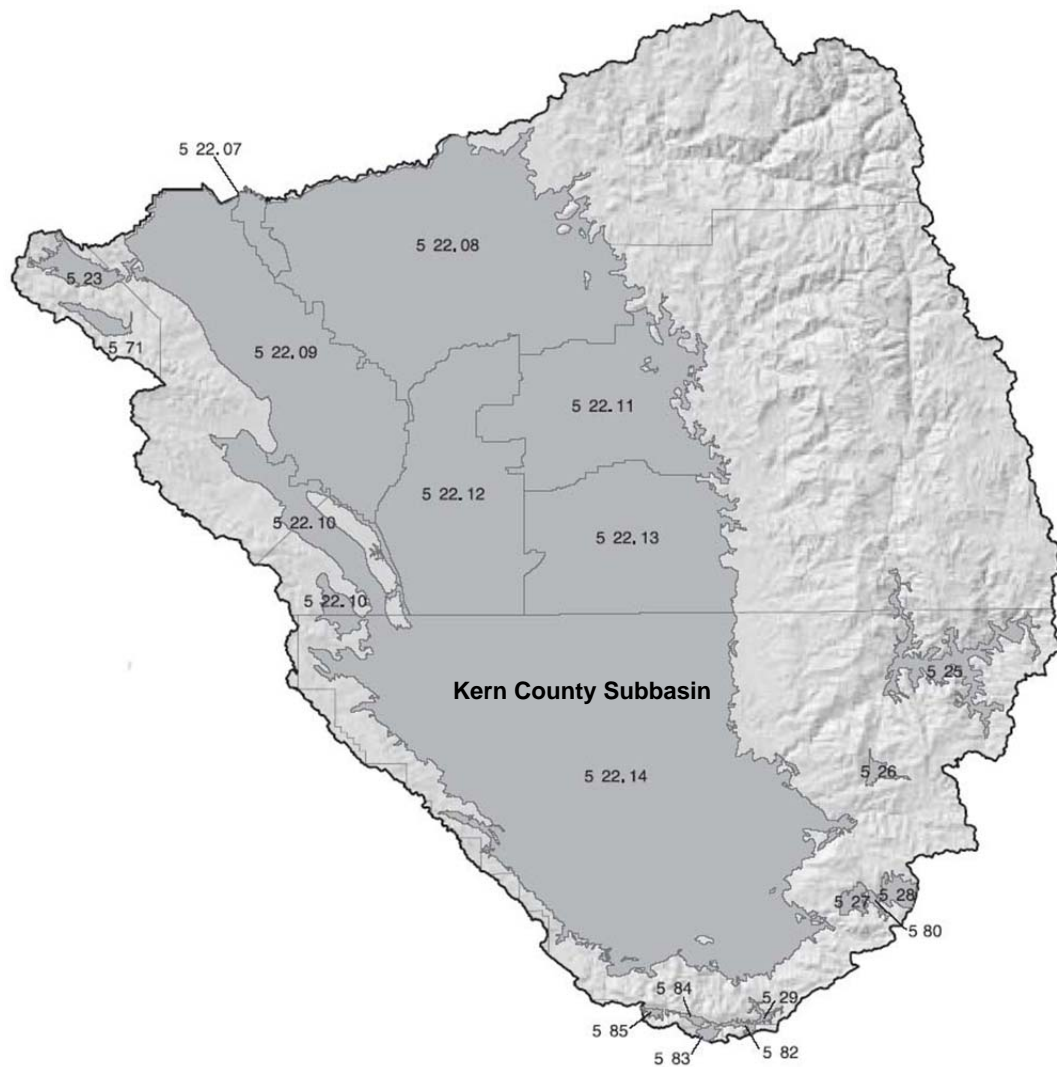


Figure 1. Tulare Lake Hydrologic Region

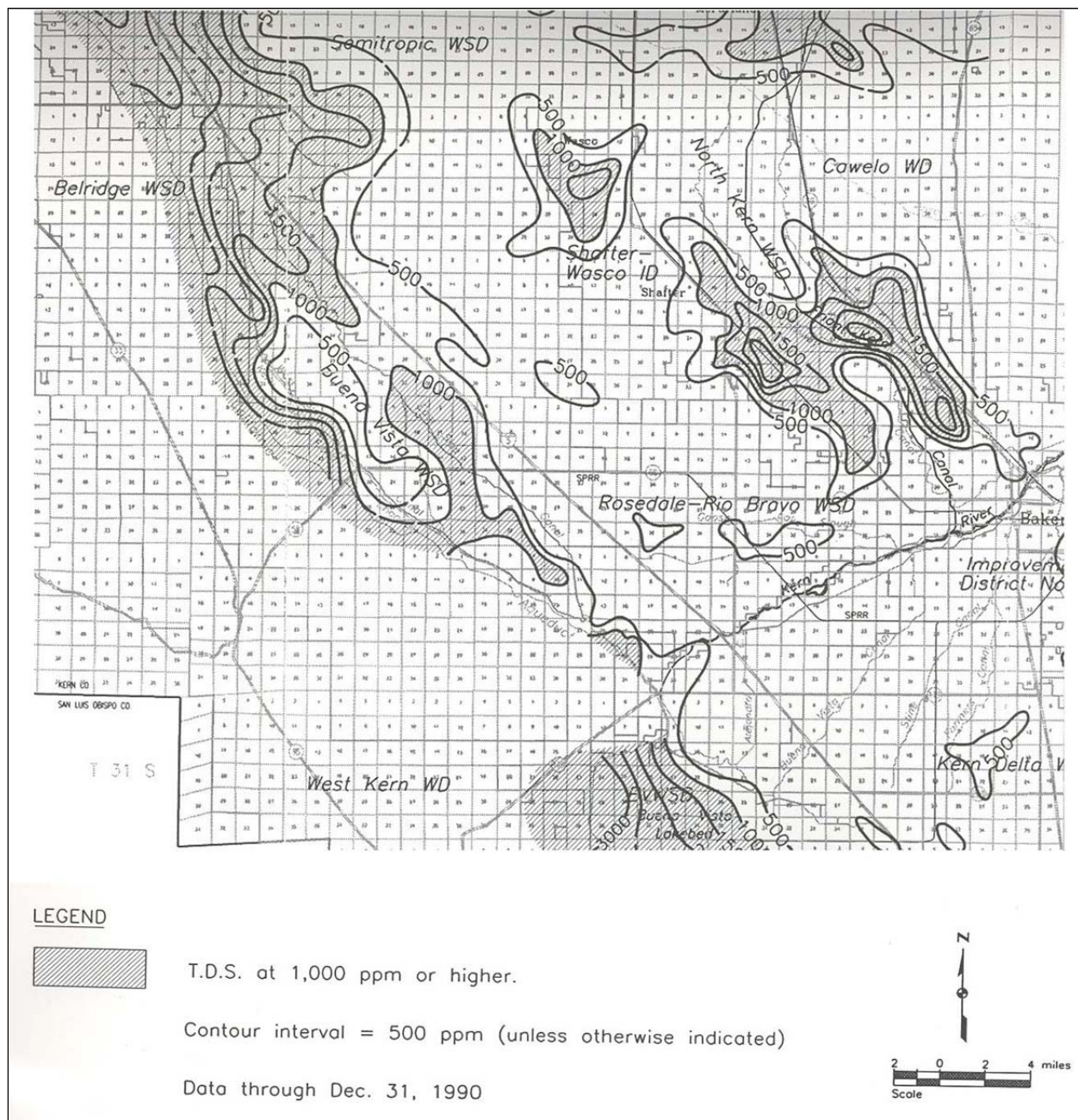


Figure 2. Groundwater Quality – Unconfined Aquifer
Source: Kern County Water Agency, Water Supply Report 1997

The City of Wasco existing water system consists of nine wells and a distribution system. One well, Well #6, is currently inactive due to high concentrations of nitrate and DBCP concentrations that exceed drinking water standards. Well #9 is inactive due to high nitrates. Well #2 is located on the lower most elevation zone within the distribution system and is equipped with a 200 horsepower pump. Due to its locations and size of pump, Well #2 is currently only operated to supply irrigation water to the Valley Rose Golf Course as it would over pressurize the local distribution system if maintained under constant operation. Water supply for domestic service and fire flow is currently supplied from the remaining six active wells.

The wells range in depth from 700 feet to 930 feet and range in capacity from 650 GPM to 1,700 GPM. The system has two pressure zones which dividing line is along Magnolia Avenue pressure zone division. Only three wells are equipped with backup generators and all wells have hydro-pneumatic tanks. Wells 9, 10 and 12 are each equipped with a variable frequency drive. Start and stop system pressure for each well varies depending on the seasonal demand throughout the system. However, wells are typically operated in such a way to maintain a pressure of 50 psi throughout the distribution system. The active wells are listed in Table 4-2, which shows the well locations, current status and production capacities. Figure 3 shows for the relative location of the water wells.

Table 4-2 City of Wasco Water Wells						
Well #	Location	Pumping Capacity ⁽¹⁾				
		Status	GPM	MGD	AFY	PSI ⁽²⁾
5	City Yard - 8th & F	Active	748	1.08	1205	39
6	Santa Fe - H St. between Roberts and Rouse	Inactive	0	0.00	0	
7	4th & Poplar	Active	905	1.30	1460	61
8	Poso between Aspen and Beckes	Active	1069	1.54	1716	61
10	Iris St & Griffith	Active	1499	2.16	2409	47
11	Oak & 11th	Active	1426	2.05	2300	0
12	McCombs at future Griffith intersection	Active	1227	1.77	1971	71
	Total Active Capacity		6874	9.90	11060	
2	City Golf Course - Hwy. 46 & Leonard	Inactive	1701	2.45	2738	0
9	16th and G St (off due to nitrates)	Inactive	1045	1.50	1679	52
	Total Standby		9620	13.85	15476	

Source: (1) City provided Pump Test Report dated 4/5/11 for Wells 2, 5, 7, 8, 10, 11 and 12, dated 12/12/08 for Well 9

(2) Pressure during Pump Test

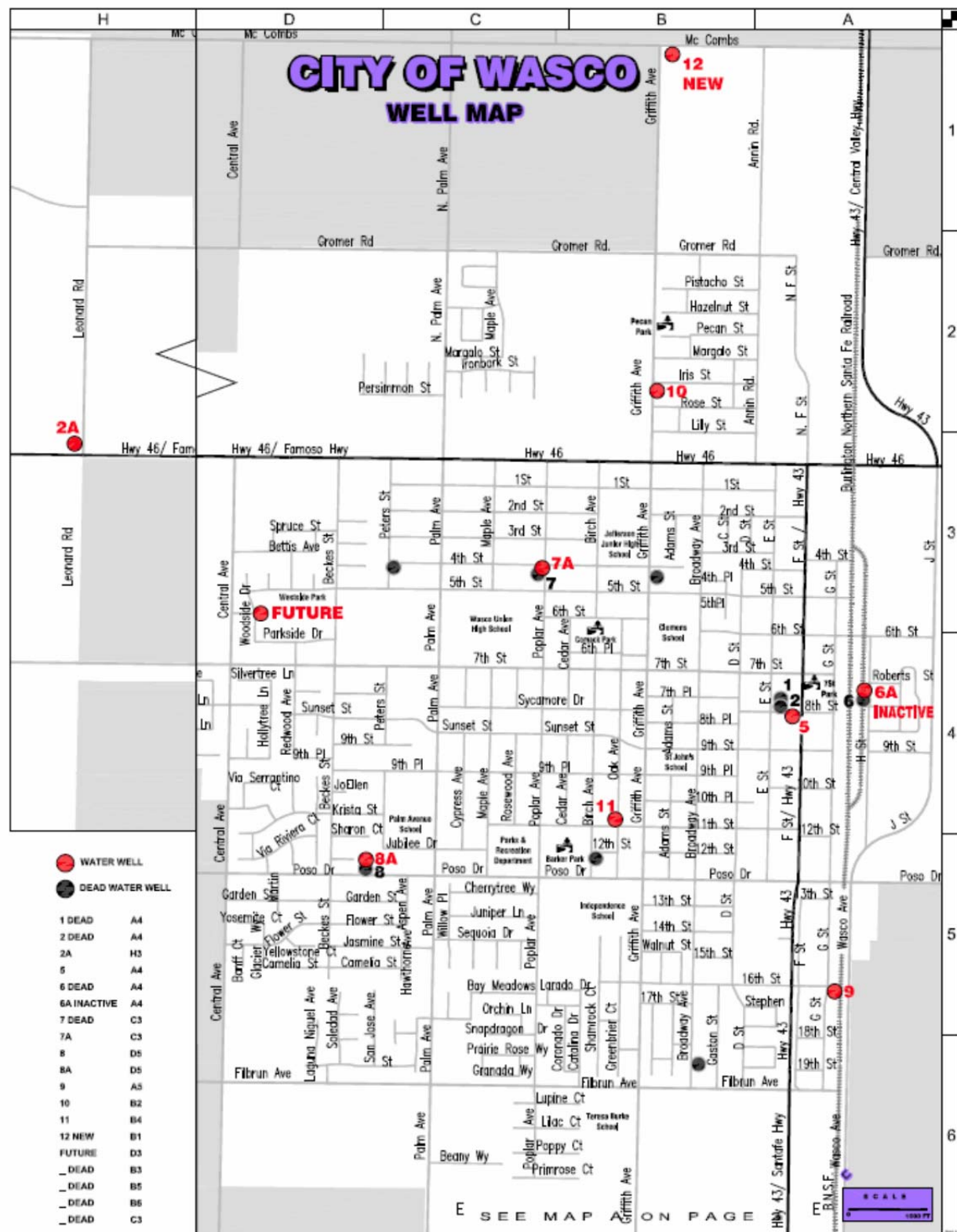


Figure 3. Wasco Water Wells Location

Table 4-3 shows the amount of groundwater pumped by the City of Wasco within the past five years.

Table 4-3 Amount of Groundwater Pumped					
Basin Name	2005	2006	2007	2008	2009
Kern County Subbasin	4,444	4,583	4,768	4,791	4,853
% of Total Water Supply	100%	100%	100%	100%	100%

Units of Measure: acre-feet/year

Table 4-4 shows the groundwater that is projected to be pumped by the City of Wasco.

Table 4-4 Amount of Groundwater Projected To Be Pumped						
Basin Name	2010 ^(a)	2015	2020	2025	2030	2035
Kern County Subbasin	4,681	6,661	8,925	11,469	14,293	17,397
% of Total Water Supply	100%	100%	100%	100%	100%	100%

Units of Measure: acre-feet/year. The amounts shown are based on amounts needed to meet demand.

^(a) Actual Data

Transfer and Exchange Opportunities

Currently the City of Wasco does not participate in any water transfer or exchange activities with other entities. It is not anticipated that transfers or exchanges would occur in the near future. The City, however, realizes that during supply shortage years such activities have the potential to reduce the impacts to its customers. In the future, the City could explore transfer and exchange agreements with local farmers and other water districts. For instance, the City could deliver treated water to local agricultural districts' irrigation canal system in exchange for an equal amount of surface water.

Development of Desalinated Water

Because the City of Wasco is located in the San Joaquin Valley, there are no opportunities to develop desalination of ocean water or brackish ocean water. In addition the groundwater is of adequate quality and desalination is not necessary.

Wholesale Water

Currently, the City does not receive or plan to receive wholesale water.

Determination of DMM Implementation

See DMM Section on pages 63 through 68.

Recycled Water Plan

This section of the UWMP provides information regarding the potential for recycled water to be used as a water supply source in the service area.

The City hired the services of Carollo Engineers to develop a Recycled Water Engineering Report for the City Farm Properties, back in August 2002. Table 4-5 summarizes the agencies and intercity departments that the City coordinated with, in developing its recycled engineering report.

Table 4-5 Participating Agencies	
Agency	Role in Plan Development
California Department of Health Services	Guidance and review of recycled water reuse regulations
Wasco Public Works	Planning, and grant application
Wasco Planning	CEQA review

Wastewater Quantity, Quality and Current Uses

Wastewater Collection and Treatment System

The City owns and operates a wastewater treatment facility located west of the community. The present wastewater treatment facilities were originally constructed in 1937. The Facilities have since enlarged and/or modified on a number of occasions. The last four expansions were completed in 1979 under a Clean Water Grant, in 1988 under a Farmers Home Administration Loan, and in 1999 under a State Revolving Fund loan.¹ In 2010/11, upgrades have taken place with funding under the American Recovery and Reinvestment Act of 2009.

¹ City of Wasco – Wastewater Treatment Plan Expansion Project Report, Dec. 2005

The current plant facilities consist of headworks with a Parshall flume, one mechanical bar screen, and flow meter, aerated grit chamber, two primary clarifiers, two plastic media trickling filters, two secondary clarifiers, two smaller bentonite-lined aerated ponds and one large (25 acre) unlined storage pond, three anaerobic sludge digesters, four unlined sludge drying beds, centrifuge facility and three 15-acre effluent disposal ponds. The WWTP also has a septage receiving station and laboratory, which is only used for process sampling. The design capacity of the existing plant is 3.0 mgd.¹

The City is permitted to discharge its effluent to 605 acres of City-owned land that surrounds the WWTF to the south and west (160 acres percolation and storage plus 445 acres irrigation).¹ The irrigation practice helps to replenish the area groundwater table through deep percolation and reduces groundwater overdraft. Effluent generally flows by gravity with the use of booster pumps during high flows through several miles of pipeline and open ditches. It is expected that this practice will continue in the future and aid the groundwater basin recharge.

The major pipelines in the sewage collection system range from 6-inches to 18-inches in diameter. The main pipelines that carry wastewater to the treatment facilities are a parallel 15-inch and 24-inch diameter interceptor lines, which run from Broadway and then westerly along Seventh Avenue, and an additional 24-inch interceptor line running west on Filburn and north on Magnolia.

Currently, the WWTF produces approximately 1.7 million gallons per day (mgd) (5.2 acre-feet/day) of undisinfected, secondary treated effluent. The City land is permitted for 2.9 mgd. The effluent is used strictly for agricultural practices within the reuse area.²

The City is currently permitted by the RWQCB to discharge effluent to City-owned property. Discharge to City land is governed by Waste Discharge Requirements (WDR) Order No. R5-2002-0198. The City is permitted to discharge its effluent to 605 acres of City-owned land that surrounds the WWTF to the south and west (160 acres percolation and storage plus 445 acres irrigation).² The irrigation practice helps to replenish the area groundwater table through deep percolation and reduces groundwater overdraft. Effluent generally flows by gravity with the use

¹ City of Wasco – Recycled Water Engineering Report City Farm Properties, August 2002.

² California Regional Water Quality Control Board Order No. R5-2002-0198 Waste Discharge Requirements for Wasco WWT Facility

of booster pumps during high flows through several miles of pipeline and open ditches. It is expected that this practice will continue in the future and aid the groundwater basin recharge.

Wastewater Collected and Recycled Water Produced

The following table presents the current and projected amount of wastewater to be collected and treated to 2035 for the City of Wasco.

Table 4-6 Wastewater Collected and Treated							
	2005	2010	2015	2020	2025	2030	2035
Wastewater Collected and Treated	1,899	1,866	3,246	3,978	4,710	5,443	6,175
Quantity That Meets Recycled Water Standard	1,899	1,866	3,246	3,978	4,710	5,443	6,175

Notes: (1) Units of Measure: Acre-feet/Year
(2) Year 2005 and 2010 is actual data.
(3) Projections from 2015 through 2030 based on 115gpcpd per City of Wasco – Wastewater Treatment Plant Expansion Project Report, Dec. 2005. The 115gpcpd was applied to population growth per City of Wasco – Water Master Plan, April 2007.

Currently, the WWTP produces approximately 1.7 million gallons per day (mgd) (5.2 acre-feet/day) of undisinfected, secondary treated effluent. The City land is permitted for 2.9 mgd. The effluent is used strictly for agricultural practices within the reuse area. The crops which have consisted of cotton and alfalfa are irrigated by the flood and furrow method.¹

Table 4-7 Recycled Water Uses - Actual		
Method	Treatment Level	2010
Agriculture (groundwater recharge through deep percolation)	Secondary	1,866
Landscape	--	0
Wildlife Habitat	--	0
Wetlands	--	0
Industrial	--	0
Total		1,866

Units of Measure: Acre-feet/Year

¹ City of Wasco – Recycled Water Engineering Report City Farm Properties, August 2002.

Potential and Projected Use, Optimization Plan with Incentives

Potential recycled water markets are locations where recycled water could replace potable water use. These potential markets are typically landscape or agricultural irrigation systems, or possibly industrial water users. Many of these potential uses require the recycled water to undergo certain treatment processes to meet the water quality standards. Wastewater reclamation for domestic uses is not cost effective for the City. A market study and a comprehensive field survey are needed to identify the use characteristics of potential recycled water customers. At this time the City of Wasco does not have the funds to conduct such studies.

Table 4-8 Recycled Water Uses - Potential						
Method	Treatment Level	2015	2020	2025	2030	2035
Agriculture (groundwater recharge through deep percolation)	Secondary	3,246	3,978	4,710	5,443	6,175
Landscape	--	0	0	0	0	0
Wildlife Habitat	--	0	0	0	0	0
Wetlands	--	0	0	0	0	0
Industrial	--	0	0	0	0	0
Total		3,246	3,978	4,710	5,443	6,175

Units of Measure: Acre-feet/Year

Actions Taken to Encourage Use of Recycled Water

In August 2002, the City hired the services of Carollo Engineers to develop a Recycled Water Engineering Report for the City Farm Properties. Additionally, Carollo Engineers prepared the Wastewater Treatment Plant Expansion Project Report in December 2005, for the City of Wasco.

As part of the wastewater treatment plant expansion, the City of Wasco plans to construct the facilities necessary to reliably transfer final effluent to the City owned farmland and to the existing and new percolation/evaporation ponds. The effluent reclamation facilities include the addition of a new effluent pump station, 2.8 miles of new 24-inch diameter effluent pipeline leading to the existing and new ponds, and 1,200 linear feet of 12-inch diameter effluent pipe leading to 55 acres owned by the city that currently can only be irrigated with irrigation water.

Currently, the City is delivering 1,866 AFY of recycled water for feed and fodder type crops irrigation on City-owned land. By 2035, the City is expected to deliver 6,175 AFY for agricultural irrigation. The irrigation practice helps to offset potable water use, and helps to replenish the area groundwater table through deep percolation.

Plan for Optimizing the Use of Recycled Water

To optimize the use of recycled water, cost/benefit analysis must be conducted for each project component. Encouraging and optimizing recycled water use in the City of Wasco, service area involves a combination of financial incentives, city policies, staff assistance and training opportunities.

At this time, it is not economically feasible for the City of Wasco to conduct technical and/or economic feasibility studies. Additionally, due to the City's budget constraints, the City cannot provide financial incentives to their water customers.

Section 5 Water Supply Reliability and Water Shortage Contingency Planning

The costs of demand management or supply augmentation options to reduce the frequency and severity of shortages are now high enough that city planners must look more carefully at the costs of unreliability to make the best possible estimate of the net benefit of taking specific actions, hence the term “reliability planning.” Reliability is a measure of a water service system’s expected success in managing water shortages.

To plan for long-term water supply reliability, planners examine an increasingly wide array of supply augmentation and demand reduction options to determine the best courses of action for meeting water service needs. Such options are generally evaluated using the water service reliability planning approach.

In addition to climate, other factors that can cause water supply shortages are earthquakes, chemical spills, and energy outages at treatment and pumping facilities. City Planners include the probability of catastrophic outages when using the reliability planning approach.

Reliability planning requires information about: (1) the expected frequency and severity of shortages; (2) how additional water management measures are likely to affect the frequency and severity of shortages; (3) how available contingency measures can reduce the impact of shortages when they occur.

Supply Reliability

The City of Wasco has never experienced a severe shortage of water supply, and it anticipates this condition will remain in the following years. The City’s local groundwater, which is its sole source of supply, has reliably allowed the City to meet its historical water demands. The local aquifer yields are good and can be readily recharged by percolation in the Kern River channel and other sites. The City currently has an active water conservation program including year-round watering restrictions, and prohibition of water waste. By the use of a “No-Waste” Ordinance, voluntary rationing on the part of the community and effective water conservation programs the City is insured a reliable water supply that meets federal, state, and local standards.

In addition, since the City relies on groundwater alone, it is not directly affected by the reduction of the surface water deliveries in drought years and is buffered from the effects of potential short water shortages.

The most likely reasons the City would have a deficit are that wells could not be used because of contamination or repairs or an emergency occurs which limits the water system's ability to deliver the water. Another possibility is that eventually if not enough recharge is carried out there could be a shortage caused by falling water levels. Wells could dry up and in certain areas deeper wells may not be possible.

The data in Table 5-1 evaluates the reliability of the water supply during normal, single-dry, and multiple-dry water years. The analysis indicates that the supply reliability is adequate. The projected groundwater supply under normal, single-dry, and multiple-dry water years are expected to be 100% reliable. These numbers assume that the groundwater yield is not reduced due to water quality issues.

Table 5-1 Supply Reliability								
Water Supply	Normal Water Year	Single Dry Water Year	Multiple Dry Water Years					
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Groundwater	4,681	4,681	4,681	4,681	4,681	4,681	4,681	4,681
% of Normal	100%	100%	100%	100%	100%	100%	100%	100%

Units of Measure: acre-feet/year

Based on experiences during past droughts, the community recognizes that it is better to voluntarily reduce usage when water supplies are limited. Through public awareness, reduction in water consumption is achieved.

Basis of Water Year Data

The water years used, were based on hydrologic data from 1970 to 2007¹. Based on the data compiled, the water years used for a normal (or average) water year, single-dry water year, and multiple-dry water years are listed on Table 5-2.

Table 5-2 Basis of Water Year Data		
Water Year Type	Base Year(s)	Historical Sequence
Normal Water Year	1985	1970 - 2007
Single-Dry Water Year	1994	
Multiple-Dry Water Years	1987 - 1992	

Frequency and Magnitude of Supply Deficiencies

The local region experienced a prolonged drought from 1987 through 1992. In an average year, about 30 percent of California's urban and agricultural water supplies come from groundwater pumping. Reliance on groundwater increases during droughts due to the reduced availability of surface water. Increased groundwater pumping during droughts results in increased lowering of water levels in groundwater basins. During the six years of the 1987-92 drought groundwater storage was reduced by about 919,000 acre-feet per year in Kern County. Between 1970 and 1997, about 15,100,000 AF was withdrawn from groundwater storage. During the same period, the balance between additions and extractions has replenished about 4,800,000 AF. The average change in storage since 1970 is about 368,000 AF per year. In volume of groundwater storage, the basin still stands below 1977 levels, although a definite upward trend continues.²

The City of Wasco does not anticipate any water shortages in any average rainfall year through 2035. No extraordinary conservation measures, beyond the implementation of water conservation best management practices, are reflected in the dry-year scenarios.

Factors Resulting in Inconsistency of Supply

Since the City relies on groundwater alone, it is not directly affected by the reduction of the surface water deliveries in drought years and is buffered from the effects of potential short water

¹ Kern County Water Agency – Water Supply Report: 2007, Fig. 21 "Cumulative Change in Groundwater Storage in San Joaquin Valley Portion of Kern County"

² Kern County Water Agency – Water Supply Report 2007

shortages. Supplies are not expected to be impacted by long-term shortages due to legal or environmental factors.

Table 5-3 Factors Resulting in Inconsistency of Supply				
Name of Supply	Legal	Environmental	Water Quality	Climatic
Groundwater	None	None	None	None

On a short-term basis, shortages could result from system maintenance. The likeliest interruption would be as a result of loss of power for an extended time or facility failure at treatment and pumping facilities. In the event of a power outage, Wells #8, #9, #10 and #12 are equipped with emergency generators as is the Supervisory Control and Data Acquisition (SCADA) system.

Plans to Supplement Water Sources

By 2015, the City of Wasco service area will require 6,661 ac-ft/yr, and by 2035, 17,397 ac-ft/yr will be required. Currently the combined capacity of the water wells in the City is 15,476 ac-ft/yr; assuming the full safe yield can be obtained from the groundwater supplies.

In order to assure a safe and reliable water supply for the residents and business owners in the service area, the City has completed the following improvements:

- Installation of several crucial pipeline inter-ties within the City (Appendix C)
- Upgrade of Well #7 to 150hp (2009)
- Upgrade of Well #10 to 200hp and VFD (2009)
- Purchase of Well #12 300hp with emergency generator and VFD (2009)

In order to assure a safe and reliable water supply for the residents and business owners in the service area, the City proposes the following improvements:

- Construct a 3 million gallon reservoir and well (design complete)
- Expansion of the Wastewater Treatment Plant from 3.0 mgd to 4.5 mgd (design complete)
- Emergency generator for Well #7. The emergency generator would allow the pumping facilities to remain in operation during an extended power outage.

In the event, the groundwater basin experiences overdraft conditions during an extended water drought; the City would consider implementing the following conservation measures.

- Restricted irrigation, odd/even schedule
- Residential vehicle washing restrictions
- Toilet flushing restrictions
- Gray water (dish, bath, and laundry wastewater) reuse
- Other measures not yet identified

Additionally, the City should investigate and study the supply alternatives available for meeting increased future demands. These alternatives could include, drilling of new wells, converting agricultural wells to urban uses, initiating water transfers or exchanges, increasing conservation programs, and implementation of recycled water programs.

Water Service Reliability

Projected Normal Water Year Supply and Demand Comparison

The City's groundwater wells can supply 15,476 AF/Y, which is beyond the current projected demand of 5,051 AF/Y in 2011. The City plans to upgrade its existing water supply wells to provide its future groundwater supplies; and plans to construct new wells as the need arises.

Table 5-4 Projected Normal Water Year Supply					
	2015	2020	2025	2030	2035
Supply	6,661	8,925	11,469	14,293	17,397
% of Normal Year*	100%	100%	100%	100%	100%

Units of Measure: Acre-feet/Year

* from Table 5-2. Base year for normal water year

Table 5-5 Projected Normal Water Year Demand					
	2015	2020	2025	2030	2035
Demand	6,661	8,925	11,469	14,293	17,397
% of Year 2010	142%	191%	245%	305%	372%

Units of Measure: Acre-feet/Year

Table 5-6 Projected Normal Year Supply and Demand Comparison					
	2015	2020	2025	2030	2035
Supply totals	6,661	8,925	11,469	14,293	17,397
Demand totals	6,661	8,925	11,469	14,293	17,397
Difference (supply minus demand)	0	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%

Units of Measure: Acre-feet/Year

Projected Single-Dry-Year Supply and Demand Comparison

Since the City's entire potable water demand is met with groundwater supplies, it is not directly affected by the reduction of the surface water deliveries in drought years and is buffered from the effects of potential water shortages. The City does not anticipate any water shortages in the dry-year scenarios analyzed. No extraordinary conservation measures, beyond DMM implementation, are reflected in the demand projections.

Table 5-7 Projected Single Dry Year Supply					
	2015	2020	2025	2030	2035
Supply	6,661	8,925	11,469	14,293	17,397
% of Normal Year	100%	100%	100%	100%	100%

Units of Measure: Acre-feet/Year

Table 5-8 Projected Single Dry Year Demand					
	2015	2020	2025	2030	2035
Demand	6,661	8,925	11,469	14,293	17,397
% of Normal Year	100%	100%	100%	100%	100%

Units of Measure: Acre-feet/Year

Table 5-9 Projected Single Dry Year Supply and Demand Comparison					
	2015	2020	2025	2030	2035
Supply totals	6,661	8,925	11,469	14,293	17,397
Demand totals	6,661	8,925	11,469	14,293	17,397
Difference (supply minus demand)	0	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%

Units of Measure: Acre-feet/Year

Projected Multiple-Dry-Year Supply and Demand Comparison

Since the City's entire potable water demand is met with groundwater supplies, it is not directly affected by the reduction of the surface water deliveries in drought years and is buffered from the effects of potential water shortages. The City does not anticipate any water shortages in the multiple dry-year scenarios analyzed. No extraordinary conservation measures, beyond DMM implementation, are reflected in the demand projections.

Table 5-10 Projected Supply During Multiple Dry Year Period Ending in 2015					
	2011	2012	2013	2014	2015
Supply	5,051	5,437	5,834	6,242	6,661
% of Normal Year	100%	100%	100%	100%	100%

Units of Measure: Acre-feet/Year

Table 5-11 Projected Demand During Multiple Dry Year Period Ending in 2015					
	2011	2012	2013	2014	2015
Demand	5,051	5,437	5,834	6,242	6,661
% of Normal Year	100%	100%	100%	100%	100%

Units of Measure: Acre-feet/Year

Table 5-12 Projected Supply and Demand Comparison During Multiple Dry Year Period Ending in 2015					
	2011	2012	2013	2014	2015
Supply totals	5,051	5,437	5,834	6,242	6,661
Demand totals	5,051	5,437	5,834	6,242	6,661
Difference (supply minus demand)	0	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%

Units of Measure: Acre-feet/Year

Table 5-13 Projected Supply During Multiple Dry Year Period Ending in 2020					
	2016	2017	2018	2019	2020
Supply	7,091	7,533	7,985	8,449	8,925
% of Normal Year	100%	100%	100%	100%	100%

Units of Measure: Acre-feet/Year

Table 5-14 Projected Demand During Multiple Dry Year Period Ending in 2020					
	2016	2017	2018	2019	2020
Demand	7,091	7,533	7,985	8,449	8,925
% of Normal Year	100%	100%	100%	100%	100%

Units of Measure: Acre-feet/Year

Table 5-15 Projected Supply and Demand Comparison During Multiple Dry Year Period Ending in 2020					
	2016	2017	2018	2019	2020
Supply totals	7,091	7,533	7,985	8,449	8,925
Demand totals	7,091	7,533	7,985	8,449	8,925
Difference (supply minus demand)	0	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%

Units of Measure: Acre-feet/Year

Table 5-16 Projected Supply During Multiple Dry Year Period Ending in 2025					
	2021	2022	2023	2024	2025
Supply	9,411	9,909	10,417	10,937	11,469
% of Normal Year	100%	100%	100%	100%	100%

Units of Measure: Acre-feet/Year

Table 5-17 Projected Demand During Multiple Dry Year Period Ending in 2025					
	2021	2022	2023	2024	2025
Demand	9,411	9,909	10,417	10,937	11,469
% of Normal Year	100%	100%	100%	100%	100%

Units of Measure: Acre-feet/Year

Table 5-18 Projected Supply and Demand Comparison During Multiple Dry Year Period Ending in 2025					
	2021	2022	2023	2024	2025
Supply totals	9,411	9,909	10,417	10,937	11,469
Demand totals	9,411	9,909	10,417	10,937	11,469
Difference (supply minus demand)	0	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%

Units of Measure: Acre-feet/Year

Table 5-19 Projected Supply During Multiple Dry Year Period Ending in 2030					
	2026	2027	2028	2029	2030
Supply	12,011	12,565	13,129	13,706	14,293
% of Normal Year	100%	100%	100%	100%	100%

Units of Measure: Acre-feet/Year

Table 5-20 Projected Demand During Multiple Dry Year Period Ending in 2030					
	2026	2027	2028	2029	2030
Demand	12,011	12,565	13,129	13,706	14,293
% of Normal Year	100%	100%	100%	100%	100%

Units of Measure: Acre-feet/Year

Table 5-21 Projected Supply and Demand Comparison During Multiple Dry Year Period Ending in 2030					
	2026	2027	2028	2029	2030
Supply totals	12,011	12,565	13,129	13,706	14,293
Demand totals	12,011	12,565	13,129	13,706	14,293
Difference (supply minus demand)	0	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%

Units of Measure: Acre-feet/Year

Table 5-22 Projected Supply During Multiple Dry Year Period Ending in 2035					
	2031	2032	2033	2034	2035
Supply	14,891	15,501	16,122	16,754	17,397
% of Normal Year	100%	100%	100%	100%	100%

Units of Measure: Acre-feet/Year

Table 5-23 Projected Demand During Multiple Dry Year Period Ending in 2035					
	2031	2032	2033	2034	2035
Demand	14,891	15,501	16,122	16,754	17,397
% of Normal Year	100%	100%	100%	100%	100%

Units of Measure: Acre-feet/Year

Table 5-24 Projected Supply and Demand Comparison During Multiple Dry Year Period Ending in 2035					
	2031	2032	2033	2034	2035
Supply totals	14,891	15,501	16,122	16,754	17,397
Demand totals	14,891	15,501	16,122	16,754	17,397
Difference (supply minus demand)	0	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%	0%

Units of Measure: Acre-feet/Year

Planned Water Supply Projects and Programs

In normal water supply years, the City should have adequate groundwater to meet its needs through 2035. Although it appears that the City can meet its water demands with the existing source wells for years to come, the existing wells may not meet future peaking demands during summer months.

In order to assure a safe and reliable water supply for the residents and business owners in the service area, the City has completed the following improvements:

- Installation of several crucial pipeline inter-ties within the City (Appendix C)
- Upgrade of Well #7 to 150hp (2009)
- Upgrade of Well #10 to 200hp and VFD (2009)
- Purchase of Well #12 300hp with emergency generator and VFD (2009)

In order to assure a safe and reliable water supply for the residents and business owners in the service area, the City proposes the following improvements:

- Construct a 3 million gallon reservoir and well (design complete)
- Expansion of the Wastewater Treatment Plant from 3.0 mgd to 4.5 mgd (design complete)
- Emergency generator for Well #7. The emergency generator would allow the pumping facilities to remain in operation during an extended power outage.

The proposed 3 MG reservoir and well would help to meet future peaking demands during summer months. The new reservoir and well would also provide improvements in terms of operational flexibility, and would enable the City to operate some of its production wells during off-peak electricity consumption hours. The City is applying for a grant in the future to construct the reservoir and expects to begin construction of the reservoir and new well by 2015.

Table 5-25 Future Water Supply Projects

Project Name	Normal Year AF to Agency	Single Dry Year AF to Agency	Multiple-Dry Years AF to Agency		
			Year 1	Year 2	Year 3
New 3 MG Reservoir and Well	1,775	1,775	1,775	1,775	1,775
Upgrade Well #7	1,775	1,775	1,775	1,775	1,775

Assumed new and upgraded wells will produce a minimum of 1,100 gallons per minute (GPM)

The water system needed to serve the build-out of the 20-year growth areas would include up to 18 additional wells, an expanded distribution system, the proposed 3 million gallon (MG) storage tank and two additional 1 MG storage tanks.

Additionally, the City should investigate and study the supply alternatives available for meeting increased future demands. These alternatives could include, drilling of new wells, converting agricultural wells to urban uses, initiating water transfers or exchanges, increasing conservation programs, and implementation of recycled water programs.

Water Shortage Contingency Plan

The UWMP requires a Water Shortage Emergency Plan be prepared to address methods to react to an emergency situation, which reduces supply by up to 50% of water available to the City. Conservation measures encouraged or required during an emergency shortage are temporary measures to last only for the duration of the emergency shortage. This UWMP looks at different stages of action for a 15%, 25%, 35% and 50% shortage of supply. Each of these stages is discussed below.

Stages of Action

The City of Wasco has four triggering levels which correspond to four water shortage stages. The rationing plan includes voluntary and mandatory rationing, depending on the causes, severity, and anticipated duration of the water supply shortage. The water shortage stages have reduction in consumption goals varying from 15% to 50%. Stage 1, with a target of 15% reduction, is effective whenever there is an overdraft of the groundwater table or when available water production is within plus 10% of estimated monthly peak hourly demands. Overdraft is defined as a decline in the water table as determined by the average of the depth to water in all

of the City's wells from the previous year. Stage 2, with a target of between 15% and 25% reduction, is effective whenever overdraft of the groundwater table is in its second or more consecutive year or the available water production is 10% less than the estimated monthly peak hourly demands. Stage 3, with a target of between 25% and 35% reduction, is effective whenever the available water production is 20% less than the estimated monthly peak hourly demand. Stage 4, with a target of between 35% and 50% reduction, is effective whenever the available water production is 35% less than the estimated monthly peak hourly demand. Table 5-27 shows the shortage stages, the initiating conditions and the reduction goals.

Table 5-26 Water Supply Stages and Conditions		
Stage No.	Water Supply Conditions	% Shortage
1 (Voluntary)	Overdraft of groundwater or available water production is within plus 10% of estimated monthly peak hour demands	Up to 15%
2 (Mandatory)	Overdraft of groundwater is in its second or more consecutive year or available water production is 10% less than the estimated monthly peak hour demands	15 – 25%
3 (Mandatory)	Available water production is 20% less than the estimated monthly peak hour demand	25 - 35%
4 (Mandatory)	Available water production is 35% less than the estimated monthly peak hour demand	35 - 50%

Estimate of Minimum Supply for Next Three Years

This component of the Water Shortage Contingency Plan requires the City to quantify the minimum water supply available during the next three years based on the driest multiple-year historic sequence for its water supplies. The local region experienced a prolonged drought from 1987 through 1992.¹ The driest three years sequence during that period occurred in 1990 to 1992. As discussed in Section 4, there is no water supply shortage expected during the next 25 years during a multiple-year drought. Table 8-2 below illustrates that if there were to be a drought over the next three years of the same severity of the drought which occurred in 1990 to 1992, there would not be a water supply shortage expected.

¹ Kern County Water Agency – Water Supply Report: 2007, Fig. 21 "Cumulative Change in Groundwater Storage in San Joaquin Valley Portion of Kern County"

Table 5-27 Three-Year Estimated Minimum Water Supply

Source	Year 1 2010	Year 2 2011	Year 3 2012	Normal
Groundwater	4681	5051	5437	4681
Total	4681	5051	5437	4681

Note(s): Supply amount for 2010 is actual data. The supply estimates provided for years 2011 and 2012 were derived from straight line projections from 2011 to 2015 projections.

Catastrophic Supply Interruption Plan

In the event of non-drought related events that interrupt the City's ability to provide water immediate measures need to be planned that will allow the City to provide a minimum amount of water to customers. Possible catastrophes include a regional power outage, terrorism event at selected locations or a natural disaster which affects selected facilities.

Table 5-28 Preparation Actions for a Catastrophe

Possible Catastrophe	Summary of Actions
Regional power outage	Activate emergency backup power and provide public notice through broadcasts of emergency and ask customers to reduce consumption to essential uses
Earthquake	Utilize emergency backup power if utility provided power is interrupted. Immediately implement Stage 3 or Stage 4 demand reduction program
Terrorism event	Make use of alternate production facilities as available

Prohibitions, Penalties, and Consumption Reduction Methods

The first step in a demand reduction program is to prohibit wasteful practices and provide enforcement methods. The current City ordinance regulates wastage of water and provides penalties for wastage and failure to comply with any water conservation program the City enacts. The penalties range from a warning, to fines, to flow restrictors or discontinuance of service.

Table 5-29 Mandatory Prohibitions	
Examples of Prohibitions	Stage When Prohibitions Becomes Mandatory
Washing cars without a shutoff valve on hose	Stage 1
Excessive irrigation run-off	Stage 1
Outdoor water use on a non-watering day	Stage 2
Broken sprinklers or other leaks	Stage 3
No vehicle washing	Stage 4

Table 5-30 Consumption Reduction Methods		
Consumption Reduction Method	Stage When Method Takes Effect	Projected Reduction (%)
Voluntary rationing	Stage 1	10%
Mandatory Irrigation Conservation Program	Stage 2 & 3	20% - 30%
No new connections	Stage 4	None, but no increase
No refilling of pools	Stage 3, & 4	1%
Customer allotments/Rate Changes	Stage 4	25% - 40%

Table 5-31 Penalties and Charges	
Penalty or Charge	Stage When Penalty Takes Effect
Penalty for excess use	Stage 2
Charge for excess use	Stage 3
Installation of Flow-Restricting Devices	Stage 4

Any customer violating the regulations and restrictions on water use set forth in the "No Waste" Ordinance shall receive an oral warning for the first such violation. Upon second and third violations, the customer shall receive written warning (See Appendix B). Any willful violation occurring subsequent to the issuance of the third written warning shall constitute a misdemeanor and may be referred to the County Sheriff Department for prosecution. If water service is disconnected, it shall be restored only upon payment of the turn-on charge fixed by the City.

Analysis of Revenue Impacts of Reduced Sales During Shortages

The City of Wasco has not conducted a formal study on the financial impacts of the water shortage contingency plan. However, all surplus revenues that the City collects are currently used to fund the Rate Stabilization Fund, conservation, recycling, and other capital improvements. The City estimated projected ranges of water sales by shortage stage to best understand the impact each level of shortage will have on projected revenues and expenditures by each shortage stage.

This analysis is undertaken first with no additional water purchases and no rate increases and then with a 25% rate increase at Stage 2; 50% at Stage 3, and a 100% increase at Stage 4. To cover increased expenses and decreased sales, rate increases would need to be “severe”.

Establishment of a Rate Stabilization Fund

Below is an explanation of the City’s efforts to establish a Rate Stabilization Fund:

The City is continually making improvements to the water system to benefit our customers. These improvements may be reflected in rate structure adjustments.

In order to mitigate the financial impacts of a water shortage, the City is establishing an Emergency Fund. The goal is to maintain the fund at 75% of normal water department revenue. This fund will be used to stabilize rates during periods of water shortage or disasters affecting the water supply. The City will not have to increase rates as much or as often during a prolonged or severe shortage.

However, even with the emergency fund, rate increases will be necessary during a prolonged water shortage. As described in this Plan, a Stage 2 shortage will be accompanied by a 15 – 25% reduction in water deliveries while a Stage 3 will be accompanied by a 25 - 35% reduction. The experiences of California water purveyors during the 1990-91 drought shortage demonstrated that actual water use reductions by customers are usually considerably larger than those requested by the supplier. During the 1990-91 drought shortage it was also politically difficult for many agencies to adopt the rate increases necessitated by a 20% to 50% reduction in sales. When a Water Shortage Emergency is declared, the supply shortage will trigger the appropriate Rationing Stage and rate increase.

Water rates increase by the following percentages when the indicated Stages are implemented:

Stage 1	no rate increase
Stage 2	25% increase over pre-shortage rates
Stage 3	50% increase over pre-shortage rates
Stage 4	100% increase over pre-shortage rates

End of the Water Shortage Emergency

15% increase over pre-shortage rates (This rate increase should be re-evaluated every two years).

Most California water agencies, which experienced water shortages, have found that customer gpcd has not nor is it expected to return to pre-shortage levels. After a shortage, water department expenses are expected to drop below pre-shortage levels but water sales are not expected to rebound. In anticipation of reduced sales, after a declared shortage ends, many California water agencies will set their rates for one year at 115% of the pre-shortage rates. Any excess revenues collected as a result of the rate adjustment is used to re-establish the Rate Stabilization Fund. The City will review this practice during the course of a future Water Rate Study.

Draft Ordinance/Resolution and Use Monitoring Procedure

Water use prohibitions and enforcement mechanisms must be approved by City Council resolution. A Draft Water Shortage Emergency Resolution is presented in Appendix B. The resolution can be modified depending on the severity of the drought and can be approved quickly, should an emergency arise. As each emergency arises, specific conditions of said emergency will likely be added.

Water Use Monitoring Mechanisms

Under normal water supply conditions, potable water production figures are recorded daily.

During a Stage 1 or Stage 2 water shortage, weekly production figures shall reported to the City Manager. The City Manager shall compare the weekly production to the target weekly production to verify that the reduction goal is being met. Monthly reports shall be sent to the City Council. If reduction goals are not met, the City Manager will notify the City Council so that corrective action can be taken.

During a Stage 3 or Stage 4 water shortage, the procedure listed above will be followed, with the addition of a daily production report to the City Manager.

During emergency shortages, production figures shall be reported hourly to the City Manager daily. Daily reports shall also be provided to the City Council.

City of Wasco Water Quality

Public water supplies must meet water quality standards established to protect the public health and to assure consumer acceptance. "Domestic Water Quality and Monitoring Regulations" as adopted by the State of California include bacteriological; general physical; and inorganic, organic, and general chemical monitoring, testing, and maximum contaminant level requirements applicable to public water supplies (Title 22 requirements). Monitoring and testing of the City's water supply has been carried out in accordance with applicable requirements.

A review of historical water quality data indicates that the City's water generally exceeds State Department of Health Services water quality criteria.¹

All active wells are sampled and tested for general mineral, general physical, bacteriological, inorganic, and organic chemical analyses in compliance with Title 22 requirements. The water quality information discussed in this section is from Wells 2, 5, 7a, 8a, 10, 11 and 12. Well 6 and Well 9 are currently inactive and will be included in future sampling.

Overall water quality from active wells meets the water quality criteria, however the Department

¹ City of Wasco Water Master Plan, April 2007.

of Health Services has delineated three contaminants of concern for the City's wells including nitrate, Dibromochloropropane (DBCP) and Ethylenedibromide (EDB). These are also some bacteriological issues associated with some of the wells. These constituents are discussed below. The consumer confidence report for 2009 is included in Appendix C.

Bacteriological Quality

The City has experienced positive bacteriological results in the past. In 2002, fecal coliform was detected in a sample collected in Well 2. Repeat samples collected in this well showed positive results for total coliform and negative results for fecal coliform. This well is currently not pumping into the distribution system. The causes for coliform in this well should be investigated. It may be possible to rehabilitate the well at a significant savings over the cost of a new well. Positive total coliform results are possibly due to the fact that this well is only pumped an average of 112 hours per year. If and when this well is pumped into the system, water will be chlorinated at the pump head.

Organics

DBCP has been detected in samples collected in Wells 5, 8, and 11. The concentration measured has generally been less than one-half of the 0.0002 mg/L MCL. As a result, these wells are required to conduct quarterly sampling for DBCP.

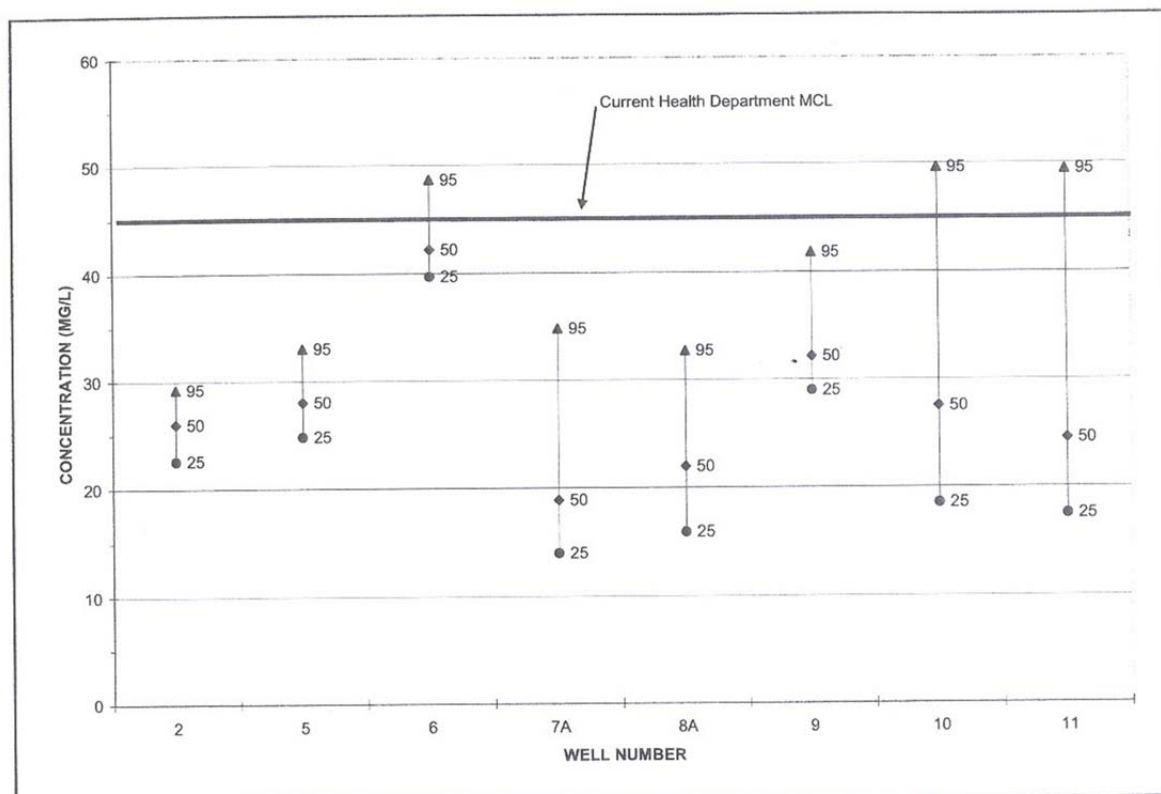
In addition to DBCP, Well 11 has also shown detectable concentrations of EDB. The EDB concentration does not exceed the current MCL, however, it is slightly above the detection limit for reporting to the Department of Health Services (DHS). Therefore, in addition to DBCP, quarterly sampling for EDB is also required for this well.

Nitrate

The City has experienced periodic nitrate spikes in certain wells; however, staff has been able to remedy the problems by means of pumping to waste during well startup and increasing the well bowls depths. The maximum allowable concentration of nitrate is 45 mg/L (as nitrate). Well 6 and Well 9 have been removed from the system due to high nitrate concentrations rather than treating the water. Elevated nitrate concentrations have been observed in Well 11. The City since has lowered the bowl depth of this well hence changing the aquifer zone from which the majority of the water is pumped.

Figure 4 shows the historical nitrate concentration distribution observed in samples taken from

each well since 1985. Extended bars indicate the range in values in nitrate concentration observed within each well.



Note: Values associated with each distribution bar indicate the percentage of samples obtained with nitrate concentrations at or below the indicated concentrations.

Figure 4. Groundwater Wells Nitrate Concentration Distribution

Source: City of Wasco Water Master Plan, April 2007 – Figure 4-2.

Water Quality Impacts on Reliability

A review of historical water quality data indicates that the City's water generally exceeds State Department of Health Services water quality criteria. The City has experience periodic nitrate spikes in certain wells; however, staff has been able to remedy the problems.

Wasco's groundwater supply is of excellent quality for drinking water purposes. No widespread problems have arisen from industrial or agricultural contamination. The City tests the drinking water quality for many constituents as required by State and Federal Regulations. In 2002, a source water assessment was conducted for each well site, by Visalia District office of Department of Health Services (DHS) with the assistance of City's staff. Nitrates, 1,2,3-Trichloropropane, Dibromochloropropane (DBCP), and Dichloromethane have been detected in the City's water quality monitoring. In general as testing methods become more discerning and regulations become more stringent, it can be expected that sources will need additional treatment to stay in compliance.

Groundwater will continue to be treated to drinking water standards, and no groundwater quality deficiencies are foreseen to occur in the next 25 years. Table 10-1 summarizes the current and projected water supply changes due to water quality.

Table 5-32 Current and Projected Water Supply Changes due to Water Quality – Percentage						
Water Source	2010	2015	2020	2025	2030	2035
Groundwater	0	0	0	0	0	0

Section 6 Demand Management Measures

The City of Wasco is committed to managing its water resources in the most responsible way possible while keeping costs to its customers to a minimum. To that end the City has for the past five years been actively trying to increase water conservation. Below are descriptions of current and future water management programs.

DMM 1 – Water Survey Programs for Single-Family Residential, and Multi-Family, Residential Customers

IMPLEMENTATION DESCRIPTION AND SCHEDULE: In order to determine typical water usage of residential customers, the City conducted a water meter audit from June 2005 until June of 2006 of thirty-nine single-family residential water meters. The results indicated an average daily usage of 600 gallons of usage per household, per day.

The Cost Benefit Analysis was examined using the Cost Effectiveness Analysis Tool from the California Urban Water Conservation Council. The analysis included 100 single family surveys and 5 multi-family unit surveys per year with a 15 gpd reduction in water use for single family and 20 gpd for multi-family units. A savings decay of 30% was assumed.

Table 6-1 Cost Benefit Analysis of DMM 1 - Water Survey Program for Single-Family Residential and Multi-Family Residential Customers	
Total Costs	\$24,000
Total Benefits	\$10,582
B/C ratio	0.44
Cost of Water (\$ per AF)	\$4,018
Water Savings (AFY)	6

Note: The Cost Benefit Analysis was prepared using the Cost Effectiveness Analysis Tool and the *Best Management Practice Costs and Savings Study* from the California Urban Water Conservation Council.

BUDGET: The City will not conduct residential water surveys at this time as it is not cost effective without additional funding. There is no funding available for this DMM.

DMM 2 – Residential Plumbing Retrofit

IMPLEMENTATION DESCRIPTION AND SCHEDULE: The City Building Department requires all new construction to implement low flow devices such as toilets and showerheads. The City has approximately 3,200 pre-1992 water accounts. In order to get those customers to change over to low flow devices, the City has to make low flow shower heads and faucet aerators available to customers at no cost. Due to the City's budget constraints, they cannot provide costly plumbing retrofits. In 2002, the City, in cooperation with Wasco High School voluntary groups distributed toilet tank displacement bags to residents that do not have low flow toilets. The City distributed approximately 500 – 1 gallon displacement bags. It is estimated that if all the distributed displacement bags were installed the water savings is approximately 2.24 acre-feet/year. The savings are based on 3.79 persons per household, flushing the toilet an average of 4 times a day per household.

The Cost Benefit Analysis was examined using the Cost Effectiveness Analysis Tool from the California Urban Water Conservation Council. The analysis included distribution of 150 showerheads and aerators, yielding 5 gpd savings per account, and a savings decay of 50%.

Table 6-2 Cost Benefit Analysis of DMM 2 - Residential Plumbing Retrofit	
Total Costs	\$34,700
Total Benefits	\$33,491
B/C ratio	0.97
Cost of Water (\$ per AF)	\$2,192
Water Savings (AFY)	16

Note: The Cost Benefit Analysis was prepared using the Cost Effectiveness Analysis Tool and the *Best Management Practice Costs and Savings Study* from the California Urban Water Conservation Council.

BUDGET: The City will not implement residential plumbing retrofit since it is not cost effective without additional funding.

DMM 3 – System water audits, leak detection, and repair

IMPLEMENTATION DESCRIPTION AND SCHEDULE: In daily activities, City staff observes pavement conditions where existing water mains are located. Typically, leaks are detected as a result of localized deterioration of pavement adjacent to a water main. The City installed a water well SCADA system in 1994 to monitor the City's well. The system has allowed the City

to identify leaks much faster than previous years. The City will complete the American Water Works Association M36 audit with guidance from the M36 Water Audits and Loss Control Programs book.

BUDGET: No specific budget has been set-aside for this DMM at this time. It will be part of operations of the Water Department.

DMM 4 – Metering with Commodity Rates for all New Connections and retrofit of existing connections.

IMPLEMENTATION DESCRIPTION AND SCHEDULE: The City requires all new construction to install water meters. Currently, less than 5 percent of the residential and approximately 30 percent of the commercial/institutional services within the system are billed by meter. The City employs varying rate structures for metered and unmetered connections and uses. The pricing is intended to be fair and equitable for all users. In 2005 the City Council passed an Ordinance amending Section 13.08.20 of the Wasco Municipal Code related to the Schedule of rates for water. See Appendix B.

In order to comply with Assembly Bill No. 2572, the City has plans to implement an aggressive plan to retrofit existing unmetered connections with meters. Beginning in fiscal year 2008-2009 the City began to retrofit 500 connections, more or less, per year with meters. Metered accounts may result in a 15% reduction in demand compared to non-metered accounts.

BUDGET: In 2008, the City had approximately 3,300 unmetered connections. The following table shows the planned number of retrofit meters installed and the associated costs for a five year period.

Table 6-1 Meter Retrofit of Existing Unmetered Connections					
Planned	2008	2009	2010	2011	2012
# of unmetered accounts	3,105	3,020	2,653	180	56
# of retrofit meters installed	85	367	2,473	124	56
Projected Expenditures	\$85,000	\$367,000	\$2,473,000	\$124,000	\$56,000
Projected water saving – AF/Y	50.4	50.4	50.4	50.4	50.4

Based on 15% water savings on a metered connection using 600 gallon per household as determined by the 2005-2006 water audit

DMM 5 – Large Landscape Conservation Programs and Incentives

IMPLEMENTATION DESCRIPTION AND SCHEDULE: There are four parks and a golf course within the City limits. The Shafter-Wasco Irrigation District supplies these large landscape water users with landscape water. The City only supplies the potable water to the public restrooms for the parks and golf course and the golf course clubhouse. Cormack Park is irrigated with City water only, while the golf course is irrigated with Well #2 when SWID allotment is used. The south side mini park is irrigated with City water only.

The Cost Benefit Analysis was examined using the Cost Effectiveness Analysis Tool from the California Urban Water Conservation Council. The analysis included 5 surveys and 9 water budgets per year with a savings decay of 50%, yielding an lifetime water savings of 29 acre feet.

Table 6-3 Cost Benefit Analysis of DMM 5 - Large Landscape Conservation Programs and Incentives	
Total Costs	\$54,823
Total Benefits	\$51,790
B/C ratio	0.94
Cost of Water (\$ per AF)	\$1,861
Water Savings (AFY)	29

Note: The Cost Benefit Analysis was prepared using the Cost Effectiveness Analysis Tool and the *Best Management Practice Costs and Savings Study* from the California Urban Water Conservation Council.

BUDGET: The City does not provide financial incentives to improve landscape water use. The City will not implement Landscape Conservation Program since it is not cost effective without additional funding.

DMM 6 – High-Efficiency Washing Machine Rebate Programs

IMPLEMENTATION DESCRIPTION AND SCHEDULE: Currently the City does not offer a rebate for high - efficiency washing machines. Through the end of 2012, Pacific Gas and Electric Company is providing a \$50 on high - efficiency washers that have a water factor of 4.5 gallons per cubic foot of laundry.

The Cost Benefit Analysis was examined using the Cost Effectiveness Analysis Tool from the California Urban Water Conservation Council. The analysis included 50 single family rebates

and 10 multi-family rebates, with 5085 gpy savings over 15 year useful life, yielding a lifetime water savings of 13 acre feet.

Table 6-4 Cost Benefit Analysis of DMM 6 - High-Efficiency Washing Machine Rebate Programs	
Total Costs	\$30,500
Total Benefits	\$25,909
B/C ratio	0.85
Cost of Water (\$ per AF)	\$2,286
Water Savings (AFY)	13

Note: The Cost Benefit Analysis was prepared using the Cost Effectiveness Analysis Tool and the *Best Management Practice Costs and Savings Study* from the California Urban Water Conservation Council.

BUDGET: The City has no plans to offer a rebate for high - efficiency washing machines. The City will not implement High-Efficiency Washing Machine Rebate Program since it is not cost effective without additional funding.

DMM 7 – Public Information Programs

IMPLEMENTATION DESCRIPTION AND SCHEDULE: The City plans to provide public information services and materials to remind the public about water and other resource issues and will have water conservation brochures available at the bill payment counter in the future. Additionally, the City will print water conservation messages on water bills and on the annual quality report. This DMM began implementation in fiscal year 2008 and the City will continue this practice. See Appendix C.

Table 6-2 Public Information - Planned			
	2010	2011	2012
Bill Inserts / Newsletters / Brochures	5,500	5,900	6,300
Projected expenditures - \$	2,000	2,000	2,000

BUDGET: No specific budget has been set-aside for this DMM at this time.

DMM 8 – School Education Programs

IMPLEMENTATION DESCRIPTION AND SCHEDULE: A flyer by American Water about water conservation topics, the hydrologic cycle and how the City's water is conserved through reclamation of treated wastewater is available to the school district. See Appendix C. The City has no available funding for school education programs at this time.

BUDGET: The City has no budget for water conservation school education programs at this time.

DMM 9 – Conservation Programs for Commercial, Industrial, and Institutional Accounts

IMPLEMENTATION DESCRIPTION AND SCHEDULE: Commercial, industrial and institutional customers are treated the same as residential customers. Therefore any demand reduction measures which are available and marketed to residential customers are also available for commercial, industrial and institutional customers. All new commercial and industrial projects are reviewed by the City and separate water meters are recommended for large landscape uses at commercial, industrial and institutional sites.

The City is planning to conduct water audits for commercial and industrial water users; however, water use data for the metered connections is collected through meter readings for billing purposes. Once the Urban Water Management Plan is adopted, the City staff will perform annual water audits; beginning with the large water users first. All commercial, industrial and institutional accounts have been metered by 2013. Conservation program will be instituted on five accounts per year.

BUDGET: No specific budget has been set-aside for this DMM at this time.

DMM 10 – Wholesale Agency Programs

The City is not a wholesale agency.

DMM 11 – Conservation Pricing

IMPLEMENTATION DESCRIPTION: The City employs varying rate structures for metered and unmetered connections and uses. Sewer use pricing is established similarly. The pricing is

intended to be fair and equitable for all users. In 2005 the City Council passed an Ordinance amending Section 13.08.20 of the Wasco Municipal Code related to the Schedule of rates for water. See Appendix B. The City will re-evaluate the water rate structures in 2012 and establish rate structures to encourage water conservation.

DMM 12 – Water Conservation Coordinator

IMPLEMENTATION DESCRIPTION AND SCHEDULE: The Water Department currently has five full-time employees and no part time employees. The Water Department Superintendent is the Water Conservation Coordinator (WCC) for the City of Wasco. As Water Department Superintendent, he is responsible for the efficient operation of the water system. In carrying out these duties, water conservation and water waste issues are addressed daily. He is also responsible for implementation of DMM for water conservation and would delegate those responsibilities either to staff or outside consultants. The Water Department Superintendent applies some of the DMM's to the City's operation within budgetary constraints.

The City will continue to implement this DMM.

DMM 13 – Water Waste Prohibition

IMPLEMENTATION DESCRIPTION AND SCHEDULE: The City has a water waste prohibition ordinance in effect, Ordinance No. 58 of the Wasco Municipal Code, and actively enforces it. The ordinance levies fines and penalties for non-compliance with the City's water conservation program or water wastage. The penalties include flow restrictors, termination of water service for exterior use or complete termination of water service. The City routinely patrols the City looking for violators during the summer months and also responds to complaints and issues citations when violations are noticed by City employees. See Appendix B for copies of the ordinance and a sample citation.

DMM 14 – Residential Ultra-low Flush Toilet Replacement Programs

IMPLEMENTATION DESCRIPTION AND SCHEDULE: As mentioned above, the City requires low-flow plumbing fixtures for new construction. It is cost prohibitive for the City to implement an incentive program to install ultra-low flush toilets (1.6 gallons or less) involving rebates. There are an estimated 5,300 standard flush toilets within the City that can cost in excess of \$300,000 to replace.

The Cost Benefit Analysis was examined using the Cost Effectiveness Analysis Tool from the California Urban Water Conservation Council. The analysis included 50 single family rebates and 10 multi-family rebates of \$200 each, with a water savings of 21.3 gpd for single family and 36.7 gpd for multi-family, yielding a lifetime water savings of 11 acre feet.

Table 6-5 Cost Benefit Analysis of DMM 14 - Residential Ultra-Low Flush Toilet Replacement Programs	
Total Costs	\$36,000
Total Benefits	\$20,694
B/C ratio	0.57
Cost of Water (\$ per AF)	\$3,396
Water Savings (AFY)	11

Note: The Cost Benefit Analysis was prepared using the Cost Effectiveness Analysis Tool and the *Best Management Practice Costs and Savings Study* from the California Urban Water Conservation Council.

BUDGET: The City will not implement Ultra-low Flush Toilet Replacement Program since it is not cost effective without additional funding.

APPENDIX A

Notice of Public Hearing/Notice of Availability

Proof of Publication

Resolution to Adopt the Urban Water Management Plan

Notice of Intent Letters to Agencies

**NOTICE OF PUBLIC HEARING
NOTICE OF AVAILABILITY FOR PUBLIC REVIEW
OF THE URBAN WATER MANAGEMENT PLAN UPDATE**

NOTICE IS HEREBY GIVEN that the City of Wasco is in the process of updating its existing Urban Water Management Plan and is seeking public input. The Urban Water Management Plan was adopted in 2010 and has been updated. A copy of the Urban Water Management Plan is on file at the City Hall, 746 8th Street, and is available for public review.

NOTICE IS FURTHER GIVEN that the City Council of the City of Wasco at its meeting on Tuesday, March 5, 2013, at 6:00 p.m., will hold a public hearing in the Council Chambers located at 746 8th Street, Wasco, California 93280. All interested parties are invited to attend said hearing and express opinions or submit evidence for or against the Plan. Written comments can be delivered to the City of Wasco, at, or prior to the public hearing. If a citizen wishes to challenge the nature of the above actions in court, they may be limited to raising only those issues they or someone else raised at the public hearing described in this notice. If the City Council concurs with the findings presented, it will adopt the Urban Water Management Plan at that time.

For further information, please call the City Manager at (661) 758-7214.

Published: Wasco Tribune

PROOF OF PUBLICATION

PROOF OF PUBLICATION

(2015.5 C.C.P.)
(GENERAL FORM)

STATE OF CALIFORNIA } ss.
County of Kern

I, the undersigned, am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a part of or interested in the above entitled matter. I am the chief clerk/publisher of *The Wasco Tribune*, a newspaper of general circulation, printed and published weekly, in the City of Wasco, County of Kern, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court order number 1838950, of the County of Kern; that the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and in any supplement thereof on the following dates, to-wit:

February 20, 2013

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.



(Signature)

Executed on _____
at Wasco, California

(min) \$25.00

The *WASCO TRIBUNE*
PO Box 1600
Shafter, CA 93263

Phone (661) 746-4942

PUBLIC NOTICE

NOTICE IS HEREBY GIVEN that the City of Wasco is in the process of updating its existing Urban Water Management Plan and is seeking public input. The Urban Water Management Plan was adopted in 2010 and has been updated. A copy of the Urban Water Management Plan is on file at the City Hall, 746 8th Street, and is available for public review.

NOTICE IS FURTHER GIVEN

PUBLIC NOTICE

that the City Council of the City of Wasco at its meeting on Tuesday, March 5, 2013, at 6:00 p.m., will hold a public hearing in the Council Chambers located at 746 8th Street, Wasco, California 93280. All interested parties are invited to attend said hearing and express opinions or submit evidence for or against the Plan. Written comments can be delivered to the City of Wasco, at, or prior to the public hearing. If a citizen wishes to challenge the nature of the above actions in court, they may be limited to raising only those issues they or someone else raised at the public hearing described in this notice. If the City Council concurs with the findings presented, it will adopt the Urban Water Management Plan at that time.

For further information, please call the City Manager at (661) 758-7214. Publish *Wasco Tribune* February 20, 2013.

RESOLUTION TO ADOPT THE REVISED URBAN WATER MANAGEMENT PLAN

RESOLUTION NO. 2013 - 2907

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF WASCO ADOPTING THE REVISED 2010 URBAN WATER MANAGEMENT PLAN

WHEREAS, the California Legislature enacted Assembly Bill 797 (Water Code Section 10610 et seq., known as the Urban Water Management Planning Act) during the 1983-1984 Regular Session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet of water annually, update an Urban Water Management Plan ("Plan") every 5 years, the primary objective of which is to plan for the conservation and efficient use of water; and

WHEREAS, the City of Wasco ("City") is an urban supplier of water supplying over 3,000 acre feet of water annually; and

WHEREAS, California Department of Water Resources requested revisions be made to the Plan; and


WHEREAS, the City has therefore, prepared and circulated for public review the revised Plan, and a properly noticed public hearing regarding said Plan was held by the City Council on March 5, 2013, and

WHEREAS, the City of Wasco did prepare and shall file said Plan with the California Department of Water Resources.

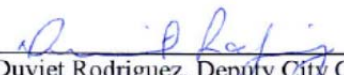
NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Wasco as follows:

1. The 2010 Urban Water Management Plan is hereby adopted and ordered filed with the City Clerk; the City Engineer is hereby authorized and directed to file the revised 2010 Urban Water Management Plan with the California Department of Water Resources within 30 days after this date; and
2. The City Manager is hereby authorized and directed to implement the Water Conservation Programs as set forth in the revised 2010 Urban Water Management Plan, which includes water shortage contingency analysis and recommendations to the City Council regarding necessary procedures, rules, and regulations to carry out effective and equitable water conservation and water recycling programs; and
3. In a water shortage, the City Manager is hereby authorized to declare a Water Shortage Emergency according to the Water Shortage Stages and Triggers indicated in the Plan, and implement necessary elements of the Plan; and
4. The City Manager shall recommend to the City Council additional regulations to carry out effective and equitable allocation of water resources.

PASSED AND ADOPTED, by the City Council of the City of Wasco, County of Kern, State of California on March 5, 2013.

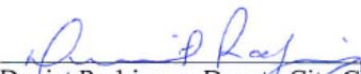

Fred West Jr., Mayor

ATTEST:


Duviet Rodriguez, Deputy City Clerk

I, DUVIET RODRIGUEZ, Deputy City Clerk of the City Council of the City of Wasco, do hereby certify that the foregoing resolution was duly adopted by the City Council of said City at a regular meeting held on March 5, 2013, and that it was so adopted by the following vote:

AYES: **West, Cortez, Espitia, Martin, Wegman**
NOES: **None**
ABSTAIN: **None**
ABSENT: **None**


Duviet Rodriguez, Deputy City Clerk

ORIGINAL NOTICE OF INTENT LETTERS TO AGENCIES



Public Works Department (661) 758-7270 Fax (661) 758-1728
764 E Street, Wasco, CA 93280

April 5, 2011

Semitropic Water Storage District
1101 Central Avenue
Wasco, CA 93280

SUBJECT: NOTICE OF 2010 URBAN WATER MANAGEMENT PLAN UPDATE

The City of Wasco has begun the process of updating its Urban Water Management Plan pursuant to the California Urban Water Management Plan Act (Water Code Section 10610-10657). We invite your agency to participate in reviewing our current Plan, which was last updated in 2007, especially as it relates to opportunities to expand conservation measures and the use of recycled water in the region.

The revised Urban Water Management Plan is required to be adopted by July 1, 2011, and to be submitted to the Department of Water Resources by August 1, 2011. The City will hold a public hearing on June 7, 2011. If you have any questions about our Plan, please contact me at (661) 758-7219.

Sincerely,



Dan Allen, Assistant City Manager



Public Works Department (661) 758-7270 Fax (661) 758-1728
764 E Street, Wasco, CA 93280

April 5, 2011

Kern County Water Agency
P.O. Box 58
Bakersfield, CA 93302

SUBJECT: NOTICE OF 2010 URBAN WATER MANAGEMENT PLAN UPDATE

The City of Wasco has begun the process of updating its Urban Water Management Plan pursuant to the California Urban Water Management Plan Act (Water Code Section 10610-10657). We invite your agency to participate in reviewing our current Plan, which was last updated in 2007, especially as it relates to opportunities to expand conservation measures and the use of recycled water in the region.

The revised Urban Water Management Plan is required to be adopted by July 1, 2011, and to be submitted to the Department of Water Resources by August 1, 2011. The City will hold a public hearing on June 7, 2011. If you have any questions about our Plan, please contact me at (661) 758-7219.

Sincerely,



Dan Allen, Assistant City Manager



Public Works Department (661) 758-7270 Fax (661) 758-1728
764 E Street, Wasco, CA 93280

April 5, 2011

Shafter-Wasco Irrigation District (SWID)
16294 Hwy. 43
P.O. Box 58
Wasco, CA 93280

SUBJECT: NOTICE OF 2010 URBAN WATER MANAGEMENT PLAN UPDATE

The City of Wasco has begun the process of updating its Urban Water Management Plan pursuant to the California Urban Water Management Plan Act (Water Code Section 10610-10657). We invite your agency to participate in reviewing our current Plan, which was last updated in 2007, especially as it relates to opportunities to expand conservation measures and the use of recycled water in the region.

The revised Urban Water Management Plan is required to be adopted by July 1, 2011, and to be submitted to the Department of Water Resources by August 1, 2011. The City will hold a public hearing on June 7, 2011. If you have any questions about our Plan, please contact me at (661) 758-7219.

Sincerely,



Dan Allen, Assistant City Manager

APPENDIX B

No-Waste Ordinance

Ordinance Related to the Schedule of Rates for Water

Citation for Water Waste Violators

Draft Resolution to Declare a Water Shortage Emergency

No-Waste Ordinance

ORDINANCE NO. 58

AN ORDINANCE OF THE CITY OF WASCO, PROHIBITING THE OBSTRUCTING, INTERFERING OR INJURY TO STREETS, ALLEYS, OR SIDEWALKS, BY ALLOWING WATER TO ACCUMULATE, STAND, OR RUN UPON SAME; MAKING THE VIOLATION THEREOF A MISDEMEANOR; AND PROVIDING A PENALTY THEREFOR.

The City Council of the City of Wasco does ordain as follows:

SECTION 1

It shall be unlawful for any person, corporation, or persons to allow any water hydrant, water hose, water sprinkler, drain pipe, or similar container or means of conveying water or other liquid substance, to flow or run in such a manner as to cause water or other liquid substance to accumulate, collect, gather, or run upon any street, sidewalk, or alley, within the city limits of the City of Wasco, so as to injure same or obstruct or interfere with the free travel thereon, or to permit such water to run in or upon said street, alley, or sidewalk at any time; except that it shall not be unlawful to clean any sidewalk or portion thereof with water.

SECTION 2

Any person violating any of the provisions of this Ordinance shall upon conviction hereunder be punished by a fine not exceeding Fifty Dollars (\$50.00), or by imprisonment in the County Jail of the County of Kern, State of California, not exceeding sixty (60) days, or by both such fine and imprisonment.

SECTION 3

This Ordinance is hereby declared to be an Ordinance for the immediate preservation of the public peace, safety and welfare, and facts constituting its urgency are

as follows: The numerous abuses and invasion of right of citizens and residents of the City of Wasco by persons conducting the practice herein prohibited have been detrimental to the general peace, safety and welfare, and immediate prohibitions of such practice is required in the interest of maintaining the general welfare.

SECTION 4

This Ordinance shall take effect immediately upon its final passage and adoption, and within fifteen (15) days thereafter shall be published once in the Wasco News, a newspaper of general circulation, published and circulated in the City of Wasco, together with the names of the members of the City Council voting for and against the same.

FRANK BARKER,

Mayor Pro Tem of the
City of Wasco.

ATTEST:

C. B. ROBERTS, City Clerk.

I, C. B. ROBERTS, City Clerk of the City of Wasco and ex-officio clerk of the City Council of said City, do hereby certify that the foregoing is a full, true and correct copy of Ordinance No. 58 of the City of Wasco, which was introduced at a regular meeting of said Council held on the 7th day of October, 1953, and finally passed not less than five (5) days thereafter on the 21st day of October, 1953, by the following vote:

AYES: Frank Barker, J. Ray Baker, Roy M. Bradley, Mervyn R. Voth.

NOES: None.

ABSENT: H. L. Wilkinson.

I further certify that said ordinance was thereupon signed by the Mayor Pro Tem of the City of Wasco.

C. B. ROBERTS,

City Clerk of the
City of Wasco.

(October 29, 1953)

Ordinance Related to the Schedule of Rates for Water

ORDINANCE NO. 2005- 498

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF WASCO AMENDING SECTION 13.08.020 OF THE WASCO MUNICIPAL CODE RELATED TO THE SCHEDULE OF RATES FOR WATER

The City Council of the City of Wasco does ordain as follows:

Section 1. Section 13.08.020 of the Wasco Municipal Code is amended as set forth in Exhibit "A":

Section 2. If any section, subsection, subdivision, sentence, clause, phrase or portion of this ordinance, or the application thereof to any person or place, is for any reason held to be unconstitutional or invalid by the decision of a court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance or its application to other persons or places.

Section 3. The City Clerk is ordered to publish this Ordinance in accordance with law, in a newspaper of general circulation in the City.

SIGNED AND ADOPTED this 5th of July, 2005



Cherylee Wegman, Mayor
City of Wasco, California

PASSED AND ADOPTED this 5th of July, 2005, by the following vote:

AYES: Mayor Wegman, Council Members Pearson, Cortez & Espitia

NOES: NONE

ABSENT: Councilmember West

ABSTAIN: NONE



Dru Gibson, City Clerk
City of Wasco, California

c:\files\wasco\ord&res\waterrates.ord

EXHIBIT "A"

13.08.020 Schedule of Rates

A. The following schedule of rates shall govern all charges for water supplied by the city through its distribution system to any person and water user as defined in this chapter:

1. Bakeries, a minimum charge of \$26.86 per month;
2. Barbershops and/or barbershops in conjunction with beauty shops, a minimum charge of \$22.39 per month;
3. Beauty shops, separate from barbershops, a minimum charge of \$26.86 per month;
4. Churches and public halls, a minimum charge of \$22.39 per month;
5. Fountains, lunchrooms, cafes, restaurants and pool halls, a minimum charge of \$26.86 per month;
6. Garages and service stations, with washracks, a minimum charge of \$44.70 per month;
7. Garages and service stations, without washracks, a minimum charge of \$31.89 per month;
8. Hotels, motels, rooming or lodging houses, a minimum charge of \$25.41 per month, with an additional charge of \$4.58 per guest room;
9. Laundries, a minimum charge of \$44.70 per month;
10. Machine shops, a minimum charge of \$22.39 per month;
11. Offices, a minimum charge of \$22.39 per month;
12. Dry goods, hardware, and furniture stores, a minimum charge of \$22.39 per month;
13. Doctors and dentists, a minimum charge of \$26.86 per month;
14. Markets, grocery and/or butcher shops, a minimum charge of \$26.86 per month;
15. Post office, a minimum charge of \$31.89 per month;

B. The charge and/or rate for water supplied to and for places not herein specifically mentioned and for users outside the City boundaries, shall be determined by the Director

of Public Works based on empirical data supplied by the new business and/or by widely used engineering reference manuals, and further consistent with other rates herein approved by the Council. The Director of Public Works shall then be responsible to notify the City Council of such new water rate at its next regularly scheduled meeting.

C. Single dwellings on lots having one to fifty feet frontage, a minimum charge of \$22.39 per month; fifty-one to seventy-five feet of frontage \$25.21 per month; seventy-six to one hundred feet frontage, \$26.86 per month; frontage greater than one hundred feet shall be fixed by resolution of the City Council

D. When more than one dwelling is situated on resident's property, a minimum charge of \$22.39 per month for each dwelling;

E. The foregoing minimum rates for resident's property covers a lot of depth from one to one hundred fifty feet; lots of a depth in excess of one hundred fifty feet shall be specifically rated in the same manner as prescribed in Section B of this section.

F. Each cabin, house trailer and/or rental, if on a separate property from a resident's property, shall have a minimum charge of \$10.17 per month each; if the same property with a dwelling, the charge shall be the same and in addition to the minimum charge applying to the dwelling.

G. For each dwelling and/or apartment in courts, the minimum charge shall be \$21.72 per month for each housekeeping unit.

H. For trees and shrubs only, on vacant lots having a maximum of fifty feet frontage and one hundred fifty feet in depth, there shall be a charge of \$10.17 per month. Vacant lots of large size or for other use shall be specially rated in the same manner as prescribed in Section B. When user has more than one connection, he shall be charged \$5.70 for each additional connection.

I. When and if water furnished to any person and/or user is run through and measured by a water meter, then the monthly charge for water so measured and furnished shall be as follows;

1. For the first five hundred cubic feet, \$2.07 per one hundred cubic feet;
2. For the next one thousand five hundred cubic feet \$1.23 per one hundred cubic feet;
3. For the next two thousand cubic feet, \$1.17 per one hundred cubic feet;
4. For all amounts in excess of four thousand cubic feet, \$.99 per one hundred cubic feet;
5. When water is so measured and furnished, a minimum charge shall be made of \$22.39 per month or \$12.81 for each living unit.

J. All new water services installed shall be metered, and the costs of the water services installed shall be metered, and the costs of the meter and installation thereof shall be borne by the owner or subdivider of the premises served.

K. On all commercial uses, other than multifamily residential, in addition to the minimum charge, when property exceeds fifty feet in frontage, there shall be an additional charge for parcels fifty-one to seventy-five feet frontage of \$5.70 per month, and for seventy-six to one hundred feet frontage, an additionally charge of \$11.14 per month.

L. For businesses or uses whether identified in, or not provided for, in this chapter, and whom do not have an existing water meter the city herein reserves the right to install, or have installed by its contracting agent a water meter to measure the water furnished. If such a meter is installed, the charge of the meter may be placed on the users monthly water bill, and thereby provide reimbursement to the city.

M. In addition to the foregoing rates, every person or water user who has upon his premises an evaporative water cooler shall pay, in addition to the regular monthly bill, \$4.47 per three thousand five hundred cubic feet of air per minute, which is being operated or set up to operate without suitable return pump or satisfactorily arranged so that the water used in conjunction with the cooler is not recirculated in the cooler. For every cooler which size exceeds three thousand five hundred cubic feet of air per minute, which is separate or set up to operate without a suitable return pump or satisfactorily arranged so that the cooling water is not recirculated, there shall be an additional charge of \$6.69 per month.

N. For every heating pump, air conditioning system or refrigeration-type air cooler which requires water in its operation, which the heating pump, air conditioning system or refrigeration-type cooler does not have a suitable return pump or satisfactory water return system, there shall be a charge of \$15.61 per month for each unit ton capacity.

Citation for Water Waste Violators

NO 404

CITY OF WASCO

DEPT. OF CODE ENFORCEMENT

WARNING NOTICE

Issued To: _____

Date: _____

Address: _____

Time: _____

This is to inform you that you are in violation of the City of Wasco Municipal Code Chapter 12.08 Section 12.08.10 and Ordinance No. 94 of the Wasco Public Utility District as adopted by the City of Wasco concerning water waste on your premises.

Please be more careful in the future and cooperate with us in conserving all water as possible, by making sure that open hoses are not left running unattended; that all faucets are closed before you retire for the night; that all leaky hydrants are promptly repaired and pumps installed on evaporative coolers.

Under the Provisions of Ordinance 12.08.20 it is unlawful for anyone to allow excessive water to run upon any street, sidewalk or alley within the city limits of the City of Wasco. Convicted violators of the Ordinance are subject to a fine not exceeding \$50.00 or imprisonment in the County Jail not exceeding 60 days or by both such fine and imprisonment.

Thank you for your cooperation. If you have any questions please call 758-7285.

COMMENTS: _____

ISSUED BY: _____

Draft Resolution to Declare a Water Shortage Emergency

DRAFT RESOLUTION NO. _____

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF WASCO TO DECLARE A WATER SHORTAGE EMERGENCY

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF WASCO AS FOLLOWS:

WHEREAS, PURSUANT to California Water Code Section 350 et seq., the Council has conducted duly noticed public hearings to establish the criteria under which a water shortage emergency may be declared.

WHEREAS, the Council finds, determines and declares as follows:

- (a) The City is the water purveyor for the property owners and inhabitants of Wasco;
- (b) The demand for water service is not expected to lessen.
- (c) When the combined total amount of water supply available to the City from all sources falls at or below the Stage 2 triggering levels described in the current Urban Water Management Plan, the City will declare a water shortage emergency. The water supply would not be adequate to meet the ordinary demands and requirements of water consumers without depleting the City's water supply to the extent that there may be insufficient water for human consumption, sanitation, fire protection, and environmental requirements. This condition is likely to exist until precipitation and inflow dramatically increases or until water system damage resulting from a disaster are repaired and normal water service is restored.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Wasco hereby directs the City Manager to find, determine, declare and conclude that a water shortage emergency condition exists that threatens the adequacy of water supply, until the City's water supply is deemed adequate. After the declaration of a water shortage emergency, the City Manager is directed to determine the appropriate Rationing Stage and implement the City's Water Shortage Emergency Response.

FURTHERMORE, the Council shall periodically conduct proceedings to determine additional restrictions and regulations which may be necessary to safeguard the adequacy of the water supply for domestic, sanitation, fire protection, and environmental requirements.

PASSED AND ADOPTED, by the City Council of the City of Wasco, County of Kern, State of California on _____.

Name , Mayor

ATTEST:

Name , City Clerk

I, _____, City Clerk of the City Council of the City of Wasco, do hereby certify that the foregoing resolution was duly adopted by the City Council of said City at a regular meeting held on _____, and that it was so adopted by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

Name , City Clerk

APPENDIX C

2009 Consumer Confidence Report

Crucial Pipeline Inter-Ties

Sample Water Bill

Conservation Flyer for School Education

2009 Consumer Confidence Report

2009 Consumer Confidence Report

Water System Name: **CITY OF WASCO**

Report Date: **May 3, 2010**

We test the drinking water quality for many constituents as required by State and Federal Regulations. This report shows the results of our monitoring for the period of January 1 - December 31, 2009.

Este informe contiene información muy importante sobre su agua beber. Tradúzcalo ó hable con alguien que lo entienda bien.

Type of water source(s) in use: Groundwater

Name & location of source(s): Eight deep well turbine pumps designated as #2, #5, #7, #8, #9, #10, #11 and #12 pumping from the Kern County Sub basin.

Drinking Water Source Assessment information: A source water assessment was conducted for Wells #2 through #11 in 2003 and #12 in 2009. The results of this assessment indicate that our water sources are most Vulnerable to the following activities: Chemical, petroleum processing/storage, automobile body shops, gas stations, repair shops, farm machinery repair, septic systems, sewer collection systems, underground storage tanks, historic gas stations, fertilizer, pesticide/herbicide application and animal feeding operations.

Time and place of regularly scheduled board meetings for public participation: 7:00 p.m. on the 1st And 3rd Tuesday of each month at 746 8th Street.

For more information, contact Stacie Joslin

Phone: (661) 758-7250

TERMS USED IN THIS REPORT:

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

Primary Drinking Water Standards (PDWS): MCLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

Secondary Drinking Water Standards (SDWS): MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the MCL levels.

ND: not detectable at testing limit

ppm: parts per million or milligrams per liter (mg/L)

ppb: parts per billion or micrograms per liter (ug/L)

ppt: parts per trillion or nanograms per liter (ng/L)

pCi/L: picocuries per liter (a measure of radiation)

Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency (USEPA).

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water

Regulatory Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Variances and Exemptions: Department permission to exceed an MCL or not comply with a treatment technique under certain conditions.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- *Microbial contaminants*, such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- *Inorganic contaminants*, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- *Pesticides and herbicides*, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- *Radioactive contaminants*, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, USEPA and the state Department of Health Services (Department) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

Tables 1, 2, 3, 4, 5 and 6 list all of the drinking water contaminants that were detected during the most recent sampling for the constituent. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The Department requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of the data, though representative of the water quality, are more than one year old.

TABLE 1 - SAMPLING RESULTS SHOWING THE DETECTION OF COLIFORM BACTERIA

Microbiological Contaminants (to be completed only if there was a detection of bacteria.)	Highest No. of detections 2008	No. of months in violation	MCL	MCLG	Typical Source of Bacteria
Total Coliform Bacteria	(In a mo.) -0-	-0-	More than 1 sample in a month with a detection	0	Naturally present in the environment
Fecal Coliform or <i>E. coli</i>	(In the year) -0-	-0-	A routine sample and a repeat sample detect total coliform and either sample also detects fecal coliform or <i>E. coli</i>	0	Human and animal fecal waste

TABLE 2 - SAMPLING RESULTS SHOWING THE DETECTION OF LEAD AND COPPER

Lead and Copper (to be completed only if there was a detection of lead or copper in the last sample set)	No. of samples collected 2008	90 th percentile level detected	No. Sites exceeding AL	AL	MCLG	Typical Source of Contaminant
Lead (ppb)	39	4.2	-0-	15	2	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits.
Copper (ppb)	39	18	-0-	1300	170	Internal corrosion of household water plumbing systems; erosion of natural deposits; leaching from wood preservatives.

TABLE 3 - SAMPLING RESULTS FOR SODIUM AND HARDNESS

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Sodium (ppm)	2007 & 2009	33	30-36			Generally found in ground and surface water
Hardness (ppm)	2007 & 2009	77	44-110			Generally found in ground and surface water

*Any violation of an MCL or AL is asterisked. Additional information regarding the violation is provided on the next page.

TABLE 4 - DETECTION OF CONTAMINANTS WITH A PRIMARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Aluminum (ppb)	2007 & 2009	7.3	ND-51	1000	600	Erosion of natural deposits; residue from some surface water treatment processes.
Arsenic (ppb)	2007 & 2009	1.1	ND-3.9	10		Erosion on natural products; runoff from orchards, glass and electronics production wastes
Barium (ppm)	2007 & 2009	0.51	0.33-0.70	1	2	Discharges of oil drilling wastes and from metal refineries; erosion of natural deposits
Nitrate (ppm)	2009	29	16-53*	45	45	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion or natural deposits
Dibromochloropropane (ppt)	2009	18	ND-55	200	1.7	Banned nematocide that may still be present in soils due to runoff/leaching from former use on soybeans, cotton, vineyards, tomatoes and tree fruit
Diethylhexylphthalate (ppb)	2009	2.8	ND-8.4	4	12	Discharge from rubber and chemical factories; inert ingredient in pesticides
Gross Alpha (Pci/L)	2002 & 2009	1.00	-1.00-2.01	15		Erosion of natural deposits
Chlorine Residual (ppm)	2009	0.46	0.06-0.82			Drinking water disinfectant added for treatment.
Total Trihalomethanes (ppb)	2009	5.1	5.1	80		By-product of drinking water chlorination.

TABLE 5 - DETECTION OF CONTAMINANTS WITH A SECONDARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Sulfate (ppm)	2007 & 2009	26.6	14-39	500		Runoff/leaching from natural deposits; industrial wastes
Specific Conductance (umho/cm)	2007	268	220-363	1600		Substances that form ions when in water; seawater influence
Total Dissolved Solids (ppm)	2007	198.3	140-230	1000		Runoff/leaching from natural deposits

TABLE 6 - DETECTION OF UNREGULATED CONTAMINANTS

Chemical or Constituent	Sample Date	Level Detected	Range of Detection	Notification Level
1,2,3-Trichloropropane (ppt)	2008	66.3	12-270	5
CHLORATE (ppb)	2003	21	21	200

*Any violation of an MCL or AL is asterisked. Additional information regarding the violation is provided below.

SWS CCR Form - Revised Jan 2006

TABLE 3 - SAMPLING RESULTS FOR SODIUM AND HARDNESS

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Sodium (ppm)	2007 & 2009	33	30-36			Generally found in ground and surface water
Hardness (ppm)	2007 & 2009	77	44-110			Generally found in ground and surface water

*Any violation of an MCL or AL is asterisked. Additional information regarding the violation is provided on the next page.

TABLE 4 - DETECTION OF CONTAMINANTS WITH A PRIMARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Aluminum (ppb)	2007 & 2009	7.3	ND-51	1000	600	Erosion of natural deposits; residue from some surface water treatment processes.
Arsenic (ppb)	2007 & 2009	1.1	ND-3.9	10		Erosion on natural products; runoff from orchards, glass and electronics production wastes
Barium (ppm)	2007 & 2009	0.51	0.33-0.70	1	2	Discharges of oil drilling wastes and from metal refineries; erosion of natural deposits
Nitrate (ppm)	2009	29	16-53*	45	45	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion or natural deposits
Dibromochloropropane (ppt)	2009	18	ND-55	200	1.7	Banned nematocide that may still be present in soils due to runoff/leaching from former use on soybeans, cotton, vineyards, tomatoes and tree fruit
Diethylhexylphthalate (ppb)	2009	2.8	ND-8.4	4	12	Discharge from rubber and chemical factories; inert ingredient in pesticides
Gross Alpha (Pci/L)	2002 & 2009	1.00	-1.00-2.01	15		Erosion of natural deposits
Chlorine Residual (ppm)	2009	0.46	0.06-0.82			Drinking water disinfectant added for treatment.
Total Trihalomethanes (ppb)	2009	5.1	5.1	80		By-product of drinking water chlorination.

TABLE 5 - DETECTION OF CONTAMINANTS WITH A SECONDARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Sulfate (ppm)	2007 & 2009	26.6	14-39	500		Runoff/leaching from natural deposits; industrial wastes
Specific Conductance (umho/cm)	2007	268	220-363	1600		Substances that form ions when in water; seawater influence
Total Dissolved Solids (ppm)	2007	198.3	140-230	1000		Runoff/leaching from natural deposits

TABLE 6 - DETECTION OF UNREGULATED CONTAMINANTS

Chemical or Constituent	Sample Date	Level Detected	Range of Detection	Notification Level
1,2,3-Trichloropropane (ppt)	2008	66.3	12-270	5
CHLORATE (ppb)	2003	21	21	200

*Any violation of an MCL or AL is asterisked. Additional information regarding the violation is provided below.

SWS CCR Form - Revised Jan 2006

Crucial Pipeline Inter-Ties

SPRING 2007

3200': 12" main on G Street between 16th and Filburn, and on Filburn between G Street and Broadway (Contractor)

4000': 12" main on Annin between Gromer and McCombs, and on McCombs between Annin and Griffith (City)

SUMMER 2007

250': 6" main on 9th Street between G Street and alley west of G Street (City)

300': 8" main on 9th Street between E Street and alley west of F Street (City)

12" main on Poso between Well #8 and Central, and on Central between Garden and Eucalyptus (Developer)

AUTUMN 2007

2200': 8" main on 5th Street between Griffith and alley west of F Street, and on Broadway between 4th Place and 5th Street

SPRING 2008

1000': 8" on Broadway between 5th Street and 7th Street (City)

180': 4" across E Street between 7th Street and 8th Street, and on alley between 7th Street and 8th Street west of F Street (City)

400': 2" on Griffith between south boundary of Teresa Burke School and south boundary of Durando property (City)

SUMMER / FALL 2008


200': 6" on 6th Street between Poplar and Cedar (City)

300': 8" on Hwy. 46 between Palm and Maple to Poplar (Golden Construction)

250': 8" on Hwy 46 from Griffith west (Dan Mayberry)




Source: Water Main Projects, notes from Mitch Maxey Spring 2011

Sample Water Bill



City of Wasco
764 E Street
Wasco, CA 93280




66325AA03-A-1
4049 A SP 0-360000



Account

Statement

ACCOUNT INFORMATION

Account Number: 
Invoice Number: 
Service Address: 
Service Period: 03/01/2011 to 03/31/2011
Billing Date: 03/01/2011
Due Date: 03/20/2011

CURRENT CHARGES

Service	Current	Previous	Usage	Amount
Water	394819	392010	2809	25.21
Sewer	0	0	0	23.78
Refuse	0	0	0	21.00

ACCOUNT ACTIVITY

Current Charges: 69.99
Balance Forward: 0.00
Total Due: 69.99

INFORMATION

- If you have any questions regarding your bill, please call (661)758-7230.
- Conserve water with helpful tips at www.h2ouse.org.

SPECIAL MESSAGE

City Hall Offices will be closed on the following Fridays: March 11, 2011 and March 25, 2011.

Conservation Flyer for School Education

Free Education Toolkit for Teachers and Parents

American Water has launched an online education toolkit designed to teach students the value of water in their lives. Available free of charge to teachers and parents (<http://amwater125.com/our-commitment/education-toolkit.aspx>), the downloadable lesson plan is geared to students in grades 5 through 12. It is one component in a series of consumer education programs to help mark the company's 125th anniversary.

Appropriate for the classroom, community events, and home, the toolkit's 12 lesson plans address issues ranging from where water comes from to ways it is treated and delivered and what is required to keep it flowing. Lesson plan titles, grouped into four units, include "From Source to Tap," "Water on the Home Front: Conservation," "LEED by Example," and "Ancient Writings to Current Laws: Historical Events and the Establishment of Drinking Water Regulations," among others.

The American Water Education Toolkit was created by science educator Ron Smith, who has more than 18 years of experience teaching biology, environmental science, and interdisciplinary studies in the classroom, laboratory, and field.

Mark LeChevallier, director, innovation and environmental stewardship for American Water, com-

mented, "A great deal of work goes into providing the public with the high-quality water they need and expect. It is important that we foster awareness of the process—from water treatment to delivery—especially as the nation faces the realities of an aging water infrastructure that is inadequate to accommodate a growing population, as well as supply challenges caused by increased demand and climate change."

